FOR ALL 8MM AND 16MM FILMERS

# A GUIDE TO MAKING BETTER MOVIES

## THE ACL MOVIE BOOK

AMATEUR CINEMA LEAGUE, INC.

# THE ACL MOVIE BOOK

FOUNDED in 1926, the Ama-
ur Cinema League has advised and
ded more than 100,000 home movie
akers in over two decades of consult-
g activity.

Out of this rich experience, the staff
the League has written the most
mplete, most balanced and most
anted book ever published on movie
aking for the amateur . . .

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n of films and filming.

**HAT MAKES A MOVIE?**—The basic prin-
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**MOVIE'S CHIEF TOOLS**—Essentials of your
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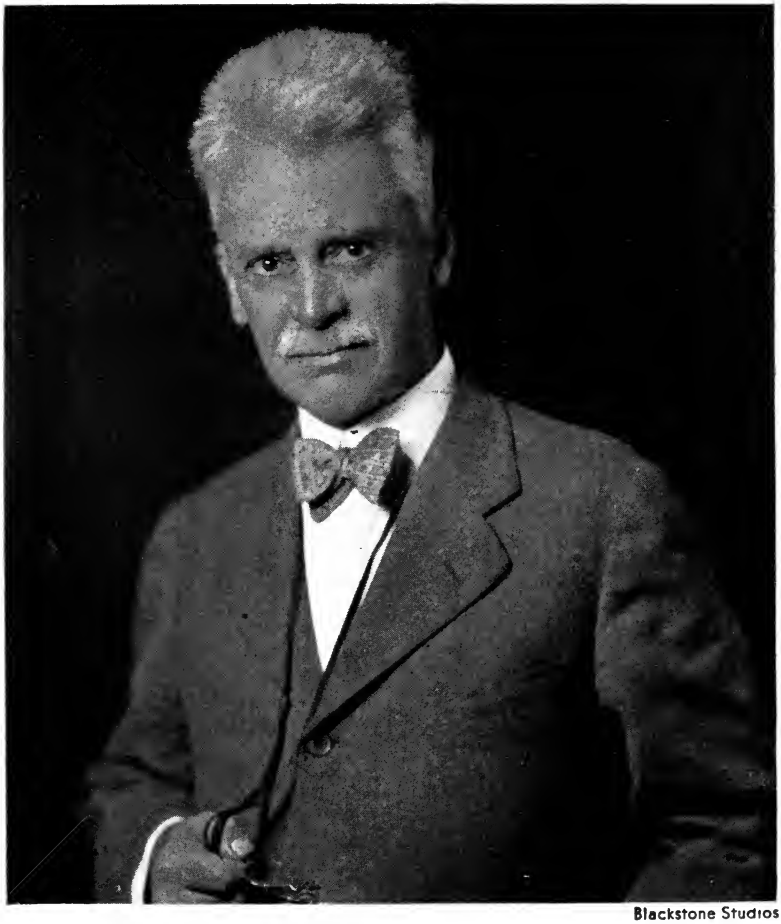

Blackstone Studios

HIRAM PERCY MAXIM, ACL

1869—1936

**FOUNDER OF THE AMATEUR CINEMA LEAGUE**

# THE ACL MOVIE BOOK

*A GUIDE TO MAKING BETTER MOVIES*

SECOND
REVISED EDITION

ILLUSTRATED

AMATEUR CINEMA LEAGUE, INC.
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## FOREWORD

THIS book is offered as an aid to personal filmers who want to make better movies and who are willing to read, study and learn, as a means to that end.

Since this volume is given to every member of the Amateur Cinema League, it is a statement of the fundamental practices of movie making that he will employ. It will aid those who use eight millimeter or sixteen millimeter film. It does not discuss theatrical motion pictures. The information that will be found in the instruction books that accompany cameras and other equipment is not repeated here. While beginners are well served by this book, it is not planned—as other books have been—to take a new movie maker forward by degrees. It is intended to give a sufficiently full statement of fundamentals, to serve new and old filmers alike.

*The ACL Movie Book* is, we believe, unique in its authorship. The product of more than twenty years of experience with amateur movie makers and their interests, the volume combines the trained advisory skills of the League's consulting staff with the first hand know-how of practicing filmers.

As such, *The ACL Movie Book* has already aided tens of thousands of amateur filmers in making better movies. We sincerely believe that it will also aid you.

## CHAPTER I

## WHAT IS A MOVIE?

A MOVIE is the most faithful record of the living world that man's genius has yet devised. It lets us look at, and listen to, the past with fewer obstacles than we should have met if we had tried to observe that past when it was the present, because a movie can recreate an event, in actual motion and sound, just as it really happened, and can then present a similar record of what occurred five thousand miles away, without losing time. This is a feat beyond the present capacity of any other human mechanism.

Yet the visual record is made by the movie with no recently discovered magic. The accomplishment consists in uniting two facts with which we have been familiar for a long time. Photography has used light to record images on sensitive surfaces since the days of Daguerre, more than a hundred years ago; human beings have, since the dawn of their experience, had what scientists call persistence of vision. If we look at something bright and if it is quickly removed from view, it will seem to hold over for a brief flash of time. This flash is enough to give us motion pictures, which are only still pictures projected on a screen fast enough, one after another, to create what appears to be continuous motion.

Although movies are built up from photography and persistence of vision, they constitute something new, so the art of making and showing them has been given the new name of cinematography. This is, putting it very simply, the act of recording on a ribbon of film a series of still photographs that

will, when they are projected serially on a screen, create the illusion of a world in actual life. Moreover, since it is possible to convert sound waves to light waves, and these, in turn, back again into sound waves, cinematography can record sounds, on these film ribbons, which add to the reality of the illusion, and, by a chemical extension of the photographic process, the entire movie can be made in natural colors. It is about the practice of cinematography that this book is written.

*New methods and tools*

The principles of the movie are old, but its special tools and methods are new. Borrowed from photography, the pictorial recording instrument is called a camera. The camera's essentials are a lens, to direct light, in order to make a picture on the sensitive surface of the film; a shutter, to cut off light when the film moves, and to permit light to reach the film when the latter is motionless; special machinery, to move the film ribbon past the lens in a series of accurate stops and starts; spindles upon which the film ribbon is wound. All these are, with the exception of the lens, placed inside a housing or case which is impervious to light, to prevent the film's being acted upon by unwanted and undirected light.

Movie film is similar to photographic film in nearly everything but its dimensions. It is a long ribbon, spooled in various lengths to fit various cameras and other mechanisms; the commonly used widths are thirty five millimeters—the theatrical type—sixteen millimeters and eight millimeters—the non theatrical types—and nine and a half millimeters—a European type. Many of these widths are available in color film and in sound film.

The sound recording instrument is known, variously, as a sound camera or a sound recorder, depending upon whether the sound is initially recorded on the same film as are the pictures. It has a more complicated mechanism for transforming sound waves into light waves.

The instrument that is used to show the movie is called a projector. Its basic essentials are a projection lamp, giving a strong light, whose beam can be focused upon the film by means of an optical system; a mechanism for moving the film past the light, in a series of accurate stops and starts, as in the camera; a shutter, serving the same purpose as does that of the camera; a lens, to magnify the film image and to throw it upon the projection surface; reel arms upon which the portion of the film to be projected and that which has been projected are wound. The lamp and the optical system only need be enclosed in a housing, because the film that is projected is no longer sensitive to light. For protection, a part of the film advancing mechanism is also enclosed. Sound projectors have additional means of transforming the light waves of the sound record back again into the original sound waves.

Although movies may be shown on any fairly light colored, smooth surface, they will be seen better if they are projected on a screen. This consists of an appropriate area which has been covered with a scientifically determined reflecting surface.

All these special tools and methods will be discussed in greater detail later in this book. Many additional facilities and procedures will be given fuller treatment.

*Kinds of movies*

Although the movies with which most of us were first acquainted are of the theatrical kind and although more people see theatrical movies, at present, than other varieties, yet theatrical motion pictures are only one clan of the movie tribe. They are, as their name suggests, films shown in theatres, the prime purpose of which is to attract paying audiences; it follows, therefore, that most theatres find it easier to secure paying customers for what we generally call entertainment pictures than for other types whose chief function is to instruct or persuade.

Personal movies are made by individuals for whatever

purpose those individuals may have in mind. They vary from family records, through vacation and travel stories, scenic presentations and films of special events to records of particular kinds that are more conveniently grouped into a further category, that is referred to in the next paragraph. Personal movies represent the true "freedom of the screen" concerning which so much public discussion has occurred, as related to theatrical motion pictures. Since movie making is available, at very reasonable cost, to everybody in the world, people everywhere can, and do, put on film the record of their personal interests and the presentation of their personal viewpoints.

The term, special purpose movies, is somewhat of a catch all classification to include films, not of the theatrical or personal types. Among these we find the human record, a study of some particular phase of man's activity, such as the ways of Eskimo fishers, life in an Andean village, an urban art colony and other ethnological and social manifestations. There is the business film in which are recorded the various processes of business and industry. The surgical, dental or medical film serves the purpose of a clinic, for a wider group. Teaching films are used for instruction as a normal part of modern pedagogy. Religious films are employed in religious activities, and they include movies illustrating the work of missions, historical records of churches and parishes, expositions of ritual, tales from the Bible or other sacred books and pictures that set forth moral lessons. The scientific movie is a statement of scientific performances and methods. Persuasive movies try to bring those who see them to accept a particular point of view, for or against something. Photoplays are acted stories that are presented in cinematographic form.

These special purpose films are made by individuals, by groups of persons acting cooperatively and non commercially or by professional producing units, for profit. They are some-

times called practical, as distinguished from hobby movies. They are frequently more elaborately conceived and executed than are personal movies.

Of these three general categories of movie making and showing, none is more important than the others. Each has its own reason for being and each may, and does, develop its special technique. Who would get the best from his movie equipment should understand the difference between these three general types of filming and should not make the mistake of assuming that methods, applicable to one are equally successful with all.

This book will offer no further discussion of theatrical movies. It will not help anybody who wishes to acquire proficiency in theatrical movie making, except as a statement of some obvious fundamentals. It is intended to serve those who wish to make personal or special purpose movies that are not primarily designed for theatrical entertainment. The number of personal and special purpose filmers is so large that their particular needs deserve definite response, which this book tries to give.

## CHAPTER II

## WHAT MAKES A MOVIE?

WHEN somebody invites you to look at his movies, you expect to see people and things in motion, for it is motion that makes the movie. The capacity to record action is the peculiar magic of the movie camera.

On the other hand, nobody is interested in a picture that offers nothing but haphazard action—a film in which unrelated people, trees, cars and buildings go whizzing past on the screen. This is but the raw material of a movie. The use of this raw material must be intelligently controlled by the filmer, for a movie, like anything else a man says, must make sense.

When we first have a movie camera in our hands, we are eager to use it—to press the button and shoot something. We rush hurriedly to the instruction booklet to learn how to put film in the camera and how to set the lens. This seems to be the logical thing to do. Here is the new camera; we shall learn how to operate it.

Suppose that we approach our first picture in an entirely different way, a way which, on the surface, may seem to be completely illogical. Let us think of the movies that we should like to make—even before we learn how to use the camera! We shall consider what we want to film, before we film it.

This brings us to the first guide post on the road to good

movie making. It reads, *What shall our movie be about?* In this simple query, we find the first step toward the kind of filming that will delight our audiences and give us a sense of real accomplishment.

We have all seen those amateur movies that are not "about anything."

One scene follows another on the screen without connection. First, we see a shot of Mother getting out of the car; then comes a scene of Brother Bill on the front porch; a view of some rose bushes flashes on the screen, and Mike, the Irish terrier, bounces into the scene to capture the camera's uncertain attention, as he races over the lawn. Then, unexpectedly, there is a shot of Main Street and a view of four or five persons waving their hands, as they walk toward the camera.

That is the method of exposing film in a snapshot camera, and, at first glance, there would seem to be no reason why we should not follow the same haphazard procedure with movies. But there is an all important difference between the movie and the still photograph. The movie is made up of a series of scenes, projected in succession on a screen in a darkened room, while each still photograph is a unit in itself, and it may be viewed, entirely disassociated from other shots that you exposed on the same roll of film.

Movie scenes, following, one after another, on the screen, are inevitably connected in the mind of the viewer. If the scenes have no relationship, the result is chaos. If the movie were simply an animated snapshot, the proper technique would be to screen each scene separately, a procedure that at once would eliminate the movie's chief advantage, its story telling capacity, and which would be very difficult mechanically.

Movie scenes are presented in succession on the screen, and they must bear relationship to one another, just as do successive sentences in our speech when we are talking to some-

body. Like a speaker, the movie commands the attention of its audience for a given period of time, and, if each scene in the film is unrelated to what precedes or follows it, the net effect is the same as it would be if the speaker were to present a different topic with every sentence that he uttered

*We need a subject*

So, a good movie must be made *about something*. It can be filmed about anything that interests you; it can be as brief as you like, or as long as you like. You can even make two movies on one roll of film. You can devote the first half of the reel to showing Baby who gets his bath out of doors on a summer morning and the second half to Fred or Mary, who runs an errand for Mother, plays croquet or rakes leaves off the driveway.

"But why use all that film on one subject, when one shot would do?" asks the economically minded movie maker.

Film costs money, it is true. But you want to get your money's value from it. If you film Baby at his bath or in the play pen, you want to see something of him—something that will recall, in the years to come, his personality, his own, individual mannerisms and how he smiles. You really want to see the baby and you want to make the whole incident live again on your screen.

Then, if you do not use the footage for a real movie, you will use it for pot shots, and that is real waste, for, after you have grown accustomed to the miracle of motion pictures on your own screen, these heterogeneous shots will be meaningless to you. They will be meaningless to others, the first time that they see them.

Suppose that the first movie is to be a story of Baby's bath, staged out of doors so that we can film it easily. We could make it something like this:

Scene 1. Mother comes out of the front door, carrying

tub, soap and towels. (We stop the camera when Mother has left the camera field.)

Scene 2. Mother places the tub on the lawn. She stands back and surveys the arrangement, then leaves the scene. (The camera, which has been held steady, so that Mother and the tub are centered in the finder, is stopped when Mother leaves.)

Scene 3. The same view as in the preceding shot, but taken closer to the tub. Junior or Dad enters the scene, with warm water in buckets, and fills the tub. While this takes place, Mother enters the scene again, this time with Baby in her arms.

Scene 4. Come closer yet, to show Mother seated on the grass beside the tub, undressing Baby.

Scene 5. Mother puts Baby into the tub, or he tries to climb in, himself. (For this shot, step nearer to the action, but include all of Baby and the tub and most of Mother. Take this scene from the side opposite that of the preceding views—just for the sake of variety.)

Scene 6. Baby in the tub, fishing for the soap which he finds and squeezes in his hands with delight. (For this scene, come so close that Baby and his tub almost fill the finder of your camera. Now you can see Baby very clearly. You might sit down to make this shot.)

Scene 7. Now stand, step backward a pace or two and point the camera downward toward Baby. Maybe he has lost the soap, and is fishing for it

Call to him and get him to look up at the camera. (His attention will soon return to the mystery of the soap.) Now, Mother's hands come into the scene, as she begins the bath.

Scene 8. Get back far enough to include most of Mother in the scene, as she bathes Baby, while Baby tries to help her by splashing.

Scene 9. Here, we get very close, to show Baby crowing and gurgling as he enjoys his bath. (Mother's hands may come into the picture as she applies the wash cloth, but Baby's head and shoulders, and part of the tub, almost fill the view, as we see it in the finder.)

Scene 10. Now we film the action again from about the same position that we used for Scene 8. Mother is bathing Baby—maybe Baby has the soap and Mother takes it from him. Baby regards her with an injured look.

Scene 11. We go back farther, to show all of Mother finishing the job. Junior or Dad is now in the scene, watching. The bath is over; Mother takes Baby from the tub.

Scene 12. Come very close again, so that only Baby is seen in Mother's lap, with Mother's hands drying him.

Scene 13. At a point almost as close, lie down on the ground and turn the camera upward to catch the faces of both Baby and Mother, as she dries him with the towel. Mother and Baby will be

shown against the sky as background, and perhaps there will be clouds to beautify the scene.

Scene 14. Include all of Mother and Baby, as Mother dresses Baby.

Scene 15. (From a different viewpoint, here, and a little farther away, to show all the action of the following scene.) Mother has finished dressing Baby, and she puts him on the ground. Baby crawls or toddles toward the tub; perhaps he wants the soap. But the bath is over, and Mother rushes to pick him up.

Scene 16. A different part of the yard, with the play pen centered in the finder. (Stand so close that the play pen almost fills the lens field.) Mother comes into the scene, with Baby in her arms, and puts him into the play pen.

Scene 17. Come quite close, so that Baby almost fills the finder. Call to Baby, to get him to look at you. (The last scene is this close view of Baby, freshly bathed and dressed, smiling at you behind the camera. Perhaps he is trying to climb out of the play pen, to reach the soap.)

This is a complete and unified movie, for these scenes are all related to each other; they are linked together in continuous succession, so this movie is said to have a "continuity," to distinguish it from a "hit or miss" series of snapshots in motion. This quality of continuity is as important in good film making as is exposure or focus.

This movie could be used as a block, in building a longer, composite picture of Baby. The next section could show, in

fewer scenes, how Baby is weighed; the third could present Baby's outing, when Mary takes him for a ride in his carriage.

In these short movies, all scenes are connected, and the action is normal and natural, because both youngsters and adults are *doing something* that takes their attention from the camera. Mother is busy with Baby's bath; Mary puts Baby into the carriage and wheels it. Here is the secret of avoiding self conscious camera shyness, for people look and act their best when they are doing something that occupies their attention. Don't worry about Baby; he is never self conscious, which is one of the reasons why he is such a delightful camera subject.

*Scenes are made from different viewpoints*

It would have been possible to film Baby's bath from one camera position—one could stand away far enough to include the front door of the house and the bath tub on the lawn. But that would be ridiculous, because one would not get a close view of Baby. The movie was broken up into separate individual "scenes," and, for each of these, the camera was placed close enough to exclude anything that was not important to the story.

That procedure enabled the audience to see Baby and Mother better—to observe what they were doing and why they were doing it. Further, there was the advantage of variety, for one long scene would have been very monotonous.

The camera can parallel the procedure that we follow in real life. We step backward for a general view and we walk nearer for a closer look. When we want to see the whole garden, we stand on the porch or on the street; when we want to look at a rose, we walk up to the bush and single out one flower from the others. The only difference is that we continue to look "between scenes," so to speak, while the camera must not. It is a waste of film and of screen time to show intervening movements between the longer view and the closer. Each scene must be steady, complete in itself.

*The scene is the basic unit*

The scene is the basic unit that makes up a movie, so, before we press the button, we must think exactly of what action or subject matter we want to have in a given scene, and we must also consider from what point of view we shall film it. Then we stand still, hold the camera steady and press the button. When the action that we want to film is completed, we stop the camera. Before we begin a second shot, we must make sure that the action for the new scene is ready.

Suppose that Dorothy has been pressed by Mother to help her by shelling peas, for dinner. There is a good movie subject, for Dorothy, who is at an age when she might be self conscious, will have her attention taken by the task. We might film her as follows:

Scene 1. *Medium shot.*

Dorothy in a chair, in the garden, reading a book. Mother comes into the scene with a pan of peas and an empty pan for the shelled peas.

This shot introduces the subject; it is taken from a point that is sufficiently distant that the audience can see where Dorothy is seated. The view must include Mother, when she enters the scene.

Scene 2. *Semi closeup.*

Mother gives Dorothy the two pans, and, reluctantly, Dorothy begins work on the peas.

This shot is made from a closer position, because we want to show that Mother is talking to Dorothy and we want to see what Mother carries.

Scene 3. *Closeup.*

Dorothy's face, while her attention is fixed on the peas.

This is made from a position still nearer to the subject; Mother is out of the scene now, and we can get closer to Dorothy, to give the audience a chance to see her clearly. Hold the camera low and shoot upward to catch Dorothy's face against the background of sky, framed by tree tops.

Scene 4. *Closeup.*

Dorothy's hands at work in the large pan of peas.

Now we have a chance to see the details of what Dorothy is doing.

Scene 5. *Medium shot.*

Dorothy shelling peas. She picks up her book and arranges it, to read while she is at work.

We come back, once more, to a general view, to close the episode. (We should make this shot from a different angle, to avoid a repetition of the first view. It might be filmed from a porch or a balcony, so that we could point the camera downward to catch a pleasantly composed scene of Dorothy and the shadows on the ground, cast by the leaves of trees, overhead.)

In these five shots, as they are shown in the illustration, the variation in camera viewpoint tells the story. So that the audience can follow every detail and can also get a pleasant view of

Dorothy, the camera was moved from a general view of the scene, showing the background, to a nearer view, showing Mother and Dorothy. Then the camera was moved yet closer to register the expression on Dorothy's face. To satisfy the audience's curiosity about what Dorothy was doing, we took another close view—this one, of her hands.

These various camera positions have been given general names—medium shot, semi closeup and closeup—to identify them among movie makers. The terms are not exact and they refer to no definite distances from camera to subject, but what they do indicate, as it is seen through the viewfinder or on the screen, is clearly shown in the illustration. Camera positions are discussed in greater detail in Chapter V.

Notice that, in scenes of Dorothy, we not only used a variety of distances from camera to subject, but also employed different camera viewpoints, to tell the story.

For Scene 3, we pointed the camera upward, to get the full closeup of Dorothy, for she was looking downward while she was shelling the peas. By changing the angle from the horizontal, we got a much better view of Dorothy and we also obtained an attractive background from the sky, framed with branches of the trees.

When we wanted to show in detail what Dorothy was doing, we pointed the camera downward at her hands, and the last shot was made with a downward angle, to avoid similarity to the first and to take advantage of the added decoration of the shadows of the leaves.

Again the camera follows our procedure in real life; for we look upward and downward, as well as straight ahead. We look at a thing from the angle that gives the best view of it, and, in selecting camera positions, the movie maker proceeds in the same way.

*Sequences*

In movie terminology, a series of scenes of one subject, all the shots of which are related to each other and are made from different viewpoints, is called a "sequence." The series of

shots of Dorothy shelling the peas is a typical sequence. Movies are made up of a number of such sequences or sections. For example, in a film of *A Day in the Life of the Smith Family,* after the sequence of Dorothy shelling the peas might come one of Tom washing the car, while this could be followed by a sequence of Junior at work on his model boat.

A sequence is the next unit after the individual scene. Just as the scene can be compared to the sentence in writing, the sequence can be considered as the paragraph. When you have completed the sequence, you have shown all that you want to present about a particular subject or activity.

Sequences need not commence with long or medium shots. There is no definite formula. In fact, a sequence could begin with a closeup. For example, we might open a sequence of Jim washing the car, by a closeup of a hand turning an outdoor faucet. Then, the next shot—a semi closeup—would reveal Jim as the owner of the hand, while the following scene, a medium shot, would show him, clad in boots, holding a sponge in one hand and a hose in the other, with the car in the background.

As a rule, a sequence presents a general view of the subject in its background, after which the camera comes closer, to give a clearer view. It may come still closer, to show more detail. A last look at the subject from a different angle can conclude the sequence. This procedure is designed to satisfy natural human curiosity, because everybody wants a general view of anything and also wishes a closer inspection of interesting details.

Sequences may be made of any subject. We can have a sequence of a church, a brook, a monument, as well as of a boy fishing or of Dorothy shelling peas. In fact, it is a truism of movie making that any subject, worth one shot is worth at least three—from different camera positions. These make a sequence automatically.

Experienced movie makers have come to recognize this so fully that they speak of "filming a sequence" rather than of "filming a scene."

## CHAPTER III

## A MOVIE'S CHIEF TOOLS

BOTH a movie camera and a still camera produce pictures by the action of light on sensitive film, but there is a marked difference between the two mechanisms. This difference follows from the fact that, while a still camera is designed to make individual still pictures, a movie camera is built to record numerous small pictures on a long ribbon of film, which, when they are projected with the proper equipment, will produce the illusion of motion on the screen.

It is in creating this illusion of continuous motion that the important difference between the two cameras lies. When one understands what makes a movie appear to move, the principles of the mechanism of his movie camera will become very clear to him.

Look at the strips of movie film that are shown on page 27, and you will see that they consist of a number of individual pictures, each of which is quite motionless in itself. But each picture, or "frame," as it is called, following the illustration from the top downward, represents a successive stage in the motion of the subject. When these pictures are flashed on the screen in quick succession, the subject will appear to move.

If these flashes occur at a speed of sixteen a second, the eye will not detect that they actually are separate, individual glimpses of still pictures, but it will see the scene as a continuous, uninterrupted flow of motion. The slowness of our eyes and nervous systems makes possible the illusion of the motion picture.

So, the movie camera really records a series of still pictures on a long ribbon of film, which runs through the camera at a speed that will permit us to take sixteen successive pictures in each second in which the camera is in operation. The motion of the film through the camera must be precise, and the rate of speed must be exactly uniform, to produce the illusion of the movie. Therefore, a motor, usually of the spring variety, is required; one must wind this, before using the camera.

*The camera's essentials*

The essential parts of the camera's interior mechanism, illustrated in the diagram on the opposite page, are as follows:

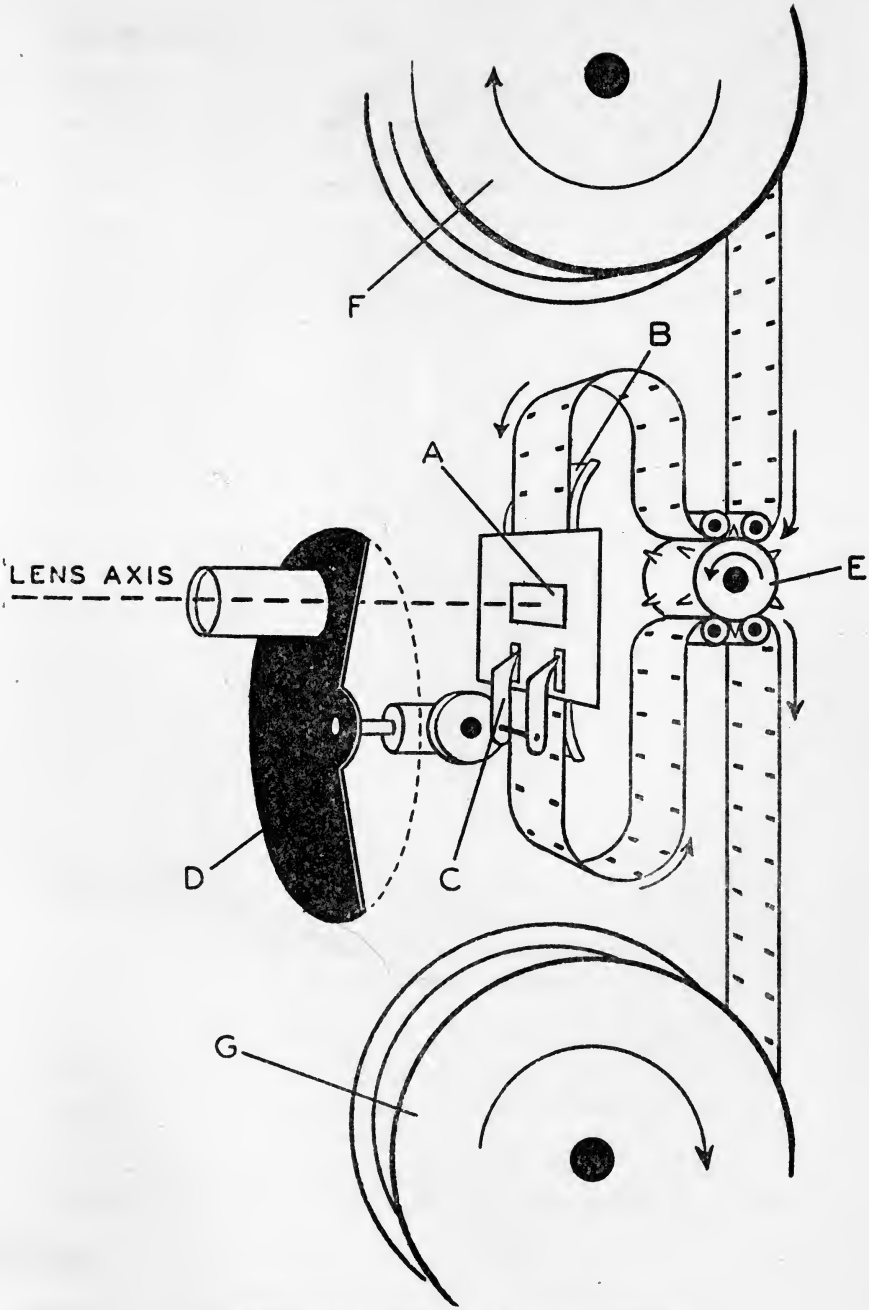
A. The aperture——the area in which is cast the image of the scene, as it was formed by the lens.

B. The gate———the channel plate which guides the film past the aperture, and there holds it flat.

C. The claw———which pulls the film down, past the aperture, frame by frame, and which allows it to remain stationary in the gate for the fraction of a second that is required for exposure.

(Note: the film is not moved steadily past the gate, for all the images would be blurred, if that were done. It is pulled down by the claw in a series of jerks, or intermittently. A frame is pulled down, and is allowed to rest in the gate for a fraction of a second and, then, the next frame is pulled down. This happens at a rate of sixteen frames a second, when the camera is operated at normal speed.)

D. The shutter——this intercepts the light coming from the lens, during the time in which the claw is pulling down a frame of film. When the frame is in position, the open sector of the shutter comes in front of




Essential Parts of a Movie Camera

the film and allows the light to strike the frame. Then the shutter rotates, and cuts off the light, while the claw pulls the next frame down into position.

E. The sprocket——this draws the film from the supply spool and feeds it, in a loop, to the claw. The loop provides the slack that insures the intermittent flow of the film. This slack, on either side of the gate, allows the film to flow continuously from the supply reel and continuously to the takeup reel, when the camera is running. (Some cameras operate without sprockets or loops.)

F. The supply reel—this is the roll of fresh film that has been loaded in the camera.

G. The takeup reel—on this reel, the film winds, after it has been exposed. When all the film has been exposed, this reel, now full, is removed from the camera, placed in its pasteboard container and is then returned to its manufacturer's processing station.

Placing the film properly in the camera, as it is illustrated in this diagram, is called threading. The construction of different cameras varies, but each is supplied with an instruction booklet which will show, by diagrams and text, how to thread it.

Threading is simplified in the magazine loading camera, because the film is automatically engaged with the camera's driving mechanism when the magazine is put in place and the camera case is closed.

Outside the camera, conveniently located on its case, is the button or lever, by which the camera mechanism may be

started and stopped. There, also, will be found the key, by which the spring motor is wound, and a footage meter which tells you how much unexposed film remains in the camera. In addition, there may be a means of controlling the camera's speed. There are several standard camera speeds, although that of sixteen frames a second is generally employed in silent filming. The other speeds that are used in creating the effect of slow or fast motion, will be discussed later.

Every camera has a viewfinder through which one looks, to determine the scene that he is filming. This viewfinder may be one of several types, but, by peering through it, one can see exactly the scene that he will capture, except when the camera is very close to the subject. Then there is a slight divergence of a few inches, because the viewfinder, although it is very close to the camera's lens, does not occupy exactly the same position as the lens, whence the fields of the two are not identical. This slight divergence is called "parallax."

*8mm. and 16mm.*

The wide use of movies for non theatrical purposes was brought about by the introduction of more economical and more convenient cameras and film. These relatively recent additions to cinematographic equipment are commonly referred to by the millimetric width of the film employed. There are 8mm. cameras and 16mm. cameras; there is 8mm. film and 16mm. film.

The 8mm. camera produces for projection a film that is eight millimeters wide; the 16mm. camera is designed to be used with film of twice that width, or sixteen millimeters. Pictures made with 8mm. cameras are less expensive than those obtained with 16mm. cameras; any unit of time, in the screening, costs less, if 8mm. film is used, than if 16mm. film is employed. (See the illustration on page 27.)

The 16mm. movie film that is used in making silent movies bears a row of perforations near each of its edges, in which

the camera's sprockets engage. It is offered, in the various types of black and white and color emulsions soon to be discussed, in daylight loading spools of fifty, one hundred and two hundred foot capacity and in magazine loads of fifty feet each.

Despite the name of the system being used (8mm. movies), film offered for 8mm. cameras is actually 16mm. in width. As such, it is known as "Double-Eight" film, and it has now completely replaced the Single-Eight film (only 8mm. wide) which also was offered in the early days of the 8mm. system. With the double-eight film, the spool or magazine is run through the camera once, exposing a row of pictures 8mm. wide; it is then turned over, re-inserted in the camera, and a second row of pictures is then exposed down the opposite edge back to the starting point. After processing by the film manufacturer, this 16mm. strip of film is slit lengthwise and the two lengths are joined together to create one length of 8mm. film for projection.

Double-eight film, in black and white and color types, is offered in twenty five foot daylight loading spools and in twenty five foot magazines.

*Loading the camera*

When you thread the camera, do not hesitate to unwind enough film for the operation; this extra footage will be trimmed off at the processing station, and you will gain nothing by trying to use it for a scene. However, watch the roll carefully while you thread the camera, lest it slip in your hands and the coils loosen.

The film is sensitive to light, and it will certainly be spoiled if it is exposed to light, when the camera is open. The rolls of film are designed for daylight loading, and the flange on the spool will protect the film from ordinary daylight. But one must not load the camera in the bright rays of direct sunlight, because, in that event, a little light may seep under-

neath the flange of the reel and produce "edge fog," a wavering area of white glare on the projected picture.

If you are loading the camera in the open, it is best to look for a shady spot or, if it is necessary to thread a new roll of film when you are in bright sunlight, to shade the camera with your body.

After the camera has been loaded with a new roll of film, and before you replace the camera cover, push the button or lever and operate the mechanism for one or two seconds, to make sure that the film is running through it properly. If the loops of film (your camera may operate without loops) collapse during this operation, rethread the camera, by disconnecting the film and starting again. These loops are all important in cameras that employ them, because, without them, film may run through the machine, but indistinguishable blurs, instead of pictures, will result.

Follow carefully the instruction book that comes with your camera, and you will not err in the threading operation. The diagrams in your instruction book will make the whole process clear.

Practice threading your camera with an old roll of film or with the short strip that most manufacturers supply with the camera. Familiarity with the operation, thus gained, will save good film later.

In threading the camera, be sure that you do not hurry. Take all the time, necessary to make sure that you have covered the essential motions; doing this will prevent camera jams and delays when you are filming.

With a magazine camera, of course, the problem of loading is simplified. You have only to put the magazine in place and to close the cover. But, even so, remember that the magazine fits in only one position; if it does not immediately drop or push into place, don't use brute force. Take time, to be sure that it is properly seated.

*Care of the camera*

Caring for the camera is important, and it may be summed up in two words—*protection* and *cleanliness*. It is foolish to deal roughly with an expensive mechanism that performs such precise functions as does the movie camera. Don't leave the loaded instrument in hot sunlight or in dusty places.

Care in threading the film and in cleaning within the case is well advised. After every two or three spools of film have been exposed, clean the gate and aperture according to the manufacturer's instructions.

If you neglect your camera, your pictures will suffer. Film scratches that are acquired in the camera are almost invariably caused by failure to clean the gate. Particles of the soft coating may become separated from the film at this point; if these are left to harden, they will build up a sharp edge which causes an annoying scratch in the film. This cannot be remedied afterward; you must prevent it, by cleaning the gate.

Some cameras require oiling, while others do not; naturally, one will follow the instructions that apply to his individual instrument. If oil is needed, never use more than a drop or two, carefully placed. This amount is sufficient, if the manufacturer's instructions for frequency of oiling are followed.

*The lens*

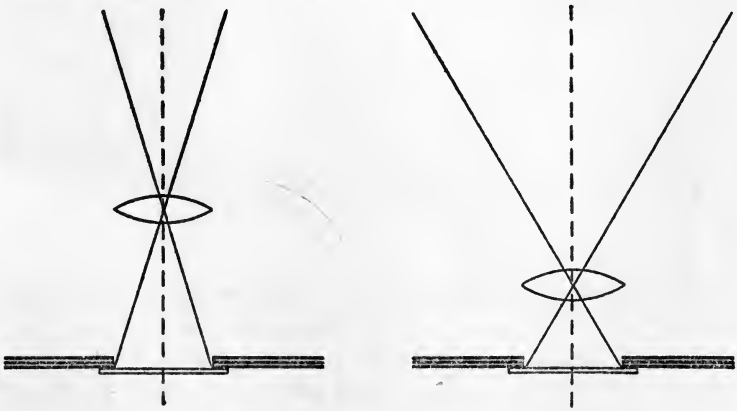
A primary link, of greatest importance, in the chain of operations that produce a successful picture is the camera lens. This is a collection of small glass units (known as elements) which are held in a tubular mount, that is called the lens barrel. These elements, all working together, bend light rays to form a tiny picture, or image, which is arranged to fall on the surface of the film through the camera aperture.

Since it is the function of the lens to collect the light rays which emanate from any subject that is placed in front of the camera, we point the lens at the subject, and some of

these rays reach the curved surface of the front element of the lens. The curvature of the glass elements in the lens acts to bend these light rays, to form a minute image or reproduction of the scene, on the surface of the film.

The lens that is most generally used on movie cameras forms a picture that has a comparable perspective to that which is seen by the human eye. If you want to include a greater area, without moving the camera farther from the subject, a "wide angle lens" is used. If one wishes to magnify the appearance of subjects on the screen, but with the result that less is included in the picture, the answer is found in lenses with barrels, longer than normal or in "telephoto lenses." They may be compared to opera glasses that are used to extend ordinary vision.

The geometrical diagram will demonstrate that the nearer the lens is placed to the film, the wider is the resultant angle of view. Hence, the lens that includes greater scene area makes objects look smaller, although the area included in the picture is larger; the reverse is true of longer barreled and telephoto lenses.



Lenses placed nearer to the film will give wider angles of view. The size of the aperture is fixed.

Lenses which collect a great amount of light are called "fast lenses." They give brighter images at the aperture and, hence, they are convenient, when the subject is poorly lighted. Fast lenses are more expensive than slower lenses, by reason of the greatly increased technical difficulties which must be overcome in their manufacture.

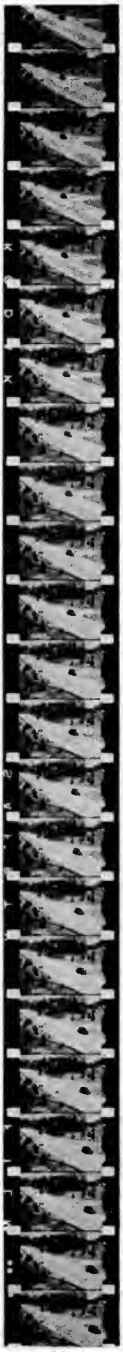
An important part of the lens assembly is the "diaphragm," which will be discussed in detail later. Its major function is to control the amount of light that passes through the lens.

The physical care of the lens, your camera's eye, is important. If one carelessly exposes its front surface to dust and finger marks, he runs the risk of spoiling the performance of this essential instrument. Keep dust out of your lens as you would keep it out of your own eyes, if you expect your camera to see clearly. It is prudent to protect the lens with a lens cap, at all times, when pictures are not being taken—only don't forget to remove the cap when you shoot! Inspect the surface of the lens before you begin to film, to see that it is clean. Lens tissue may be used, to remove dust or finger prints.

If strong light should fall directly on the front surface of a lens, it may cause "lens flare." The result of this, on the screen, will be a "fuzzy," washed out, bright area, usually near the edge of the picture. Look through the finder, to see that no bright source of light is included in the scene. This might be a lighting unit, in the case of interior filming, or the sun, itself, when you are shooting out of doors. All lenses are fitted with a hood which helps to obviate lens flare.

*Film*

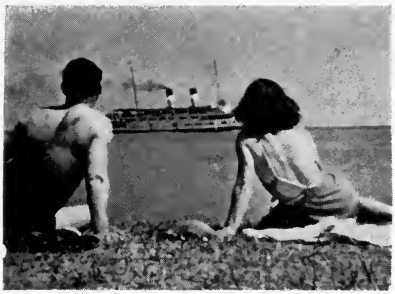
The movie film, which records and preserves the images formed by the lens, is a long, transparent ribbon, on which is coated a thin layer of gelatin, impregnated with certain chemicals and dyes which make it sensitive to light. The transparent support is called the "base," while the light sensitive gelatin coating is called the "emulsion."



16mm.

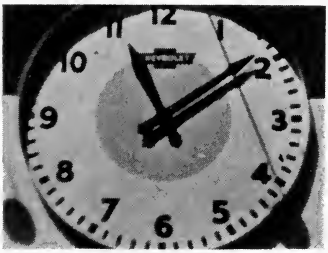
8mm.

Earl L. Clark, ACL

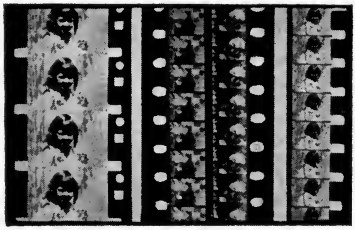


16mm. frame enlarged

Leo Caloia




8mm. frame enlarged



16mm. Double 8mm. Straight 8mm.

Note the progression of motion in the successive frames of the 16mm. strip at the left.

OVER-EXPOSURE

CORRECT EXPOSURE

UNDER-EXPOSURE

Loss of detail in the high lights marks an overexposed shot, while underexposure eliminates details in the shadows and accentuates the high lights.

The film is arranged to pass through the camera gate, so that the emulsion faces the lens. On most modern reversal films, one side has a dark coating, while the other side is of a light gray or yellow green color. This latter bears the emulsion, which is thus easily identified. The dark, "anti halation" coating, as it is called, also helps to protect the film from stray light, while it is wound on the spool. This coating is removed in processing.

Amateur movies were popularized by the perfection of "reversal film," because of the saving in cost that this introduced. Today, most personal and special purpose pictures are made on reversal film.

To understand the reversal process, consider, for a moment, the film that you use in a still camera. After your roll is developed, you have "negatives" in which values are reversed—black things are white and white things are black. From this negative, a "print," or "positive," is made, in which values are normal. For the procedure, two films are required—a positive and a negative. This method is employed, to provide the films projected in movie theatres today. A negative reel is produced and, from this, positive prints are made.

The reversal process introduced a new principle, because, by means of it, the film that was exposed in the camera and that was developed as a negative is "reversed," that is, it is chemically changed into a positive print. Thus, only one strip of film is required for the process, which obviously effects real economy. Both black and white and color movie systems use reversal film, with excellent results, in 8mm. and 16mm. widths. Perfect duplicates can be made, if extra copies of a particular movie are wanted.

The positive and negative film system is also available to amateur movie makers who use 16mm. cameras. Its most important service is to facilitate the production of a large number of prints, if they are required. Although the negative and positive film system is more expensive than the reversal

method, if only one copy of the movie is desired, it is less expensive, if many prints are to be used. This is true, because each positive print is cheaper than a duplicate of a reversal film.

Various types of black and white movie film, regardless of width—8mm. or 16mm.—differ in their sensitivity to light. Some emulsions are more sensitive to light and will produce pictures under conditions of relatively dim illumination, while less sensitive film would not. The more sensitive emulsion is called "fast." Since it requires greater complexity in manufacture, it is more expensive than the less sensitive emulsion, which is called "slow."

Black and white films differ also in their rendition of colors, a fact that requires some explanation, especially since there is no color in the black and white movie. However, everything in nature is colored, and black and white film translates these colors into various shades of gray—ranging from white to deep black.

Your film will translate the green of trees into a certain shade of gray, the pink flush of skin into another and the red petals of a flower into their appropriate, monochromatic tone. Different emulsions vary in their black and white rendition of the colors of objects that we film.

These two qualities—sensitivity to light and rendition of color—are the most important attributes of film, and it is in relation to them that films may be divided into a number of basic types.

Positive Film, or "color blind film," is the first of these. This film, that is manufactured primarily for use in making positive prints of negatives and for title work, may be exposed in the camera for general movie purposes. It is then reversed, just as is regular reversal film.

This film is very slow; it also has the most limited range of color rendition. It responds largely to blue, and not at all to red, which it renders as black.

This basic type is offered as a slow, color blind film by some distributors, who reverse it after the user has exposed it. A satisfactory picture may be obtained with it, if plenty of light is available and if the subject is such that color differentiation is not important. By present standards, the resultant image is harsh, while bright, white subjects may produce glare on the screen.

Orthochromatic Film is the next basic type. It may be more sensitive to light than is the positive kind and it is also responsive to a larger range of colors. For example, it will record the greens of landscape shots in pleasant shades of gray. However, it will not do full justice to the yellow, orange or red elements in a scene.

Panchromatic Film was developed to record, in relative shades of gray, all colors in their correct degrees of brightness, as they appear to the eye. This emulsion incorporates certain dyes which cause it to translate the various colors of subjects into black and white effects, producing substantially the same reaction that the eye gets from real life—but this is all in monochrome, of course.

Panchromatic film has a larger range of color rendition than has orthochromatic film, but it is not necessarily faster.

Extra Fast Film is available in panchromatic emulsions, generally at additional cost. Films of this type are variously known as "supersensitive," "double X" and "triple S," which are trade names that are used to indicate the speed of the film in relation to its manufacturer's other emulsions.

The four basic black and white film types—positive or "color blind," orthochromatic, panchromatic and extra fast—are sold under specialized trade names.

These are the basic groups of black and white movie film, but there remains the latest and most versatile movie recording medium—natural color film.

Modern color film requires no camera or projector attachments, to provide movie scenes in their natural colors

This film is loaded in the camera and is exposed in the same way as is black and white film; it is projected just as are other types, for the color is inherent in the film itself, becoming visible after processing.

When this film is exposed, images are formed on three overlapped layers of emulsion; during processing, each of these automatically selects its own color complement, to produce a composite color image. All this is accomplished by a very complicated chemical and mechanical process, but the result is a beautiful rendition of natural color, light and shade and form.

Such film is a miracle of modern science, for it places in the hands of the movie maker an amazingly beautiful medium that may be exposed and projected as easily as we can employ the cheapest black and white film. So far, the amateur movie maker has an enormous advantage over the cameraman of Hollywood, for, at present, no theatrical color film is so simple to use or so inexpensive.

Color film is available for both 8mm. and 16mm. cameras. A special color film is made in both widths, for indoor use with incandescent light, which will be discussed later.

When you have exposed a roll of precious movie film and you send it away to be processed, you want to be sure to get it back. Do not forget to write your name and return address legibly in the space on the film carton that is intended for that purpose. This will be the only record of your ownership of the film, when it reaches the processing station.

Make sure, too, that you are not returning an unexposed roll of film for processing. At the end of every unprocessed roll, a perforated or stamped "EXPOSED" has been placed by the manufacturer; so, if you are in doubt as to whether a particular roll has gone through the camera or not, you have only to look for this indication at the end.

Be careful in handling film after it has been exposed, because it is still sensitive to light; you can destroy the latent

image and ruin the film, if it is unrolled from the camera spool before it is sent to a processing station.

When the roll of film is returned to you, it is spooled on a projection reel of much less sturdy construction than that of the camera spool. Light will no longer damage the film, since it has been processed; hence, this reel may have open or slotted sides. It must not be used as a camera takeup spool, however, because the undeveloped film that would be wound upon it would be ruined immediately, if the reel were removed from the camera and if light were to strike it through the openings in the spools.

*The projector*

The motion picture projector is essentially similar to the movie camera, because, just as the camera must expose, for normal action, a series of still pictures at the rate of sixteen a second, the projector must flash these on the screen at the same rate, to produce the illusion of motion.

The actual mechanism that is used in the projector, to accomplish the film movement, is much the same as that of the camera, but larger and heavier, because the projector is required to operate continuously over a longer period of time and because larger film units must be handled, to give an uninterrupted show.

In the projector, we find, as in the camera, both supply and takeup reels. There are feed and takeup sprockets, placed above and below the film gate; there is a guide channel for the film and an aperture, while a claw operates intermittently to pull the film down through the gate.

Behind the aperture of the projector is placed the lamp house which contains the light source that is needed to illuminate the film picture. This light is concentrated on the aperture, by means of a reflector and lens system, the lens arrangement being a light collecting medium, known as the condenser. Most projectors have accessible reflector and condenser systems, which may need infrequent cleaning.

In front of the gate is the projection lens, which magnifies the image and focuses it on the screen. Clearest projection can be had only by keeping this lens clean.

The film channel of the projector's gate frequently picks up dust and other foreign material from films that are not kept scrupulously clean. If it is allowed to accumulate, this foreign matter may harden and scratch the film. So, before every projection, it is advisable to open the gate and to clean it with a soft, lintless cloth.

If any foreign material has collected on the film track runners, it usually may be removed by scraping them with a hardwood toothpick. Do not use a sharp metal scraper of any kind, as this will scratch the gate's polish and will make matters worse.

Projectors have electrical controls, which provide switches for turning the motor and the lamp on and off. There is also a very essential speed control, for adjusting the rate of film travel, to give a suitable effect on the screen. Most projectors have some form of tilting mechanism, to center the image on the screen vertically. There will be found a framing device, the adjustment of which will center the film picture with respect to the projector aperture. Also, there will be a mechanism, to rewind film from the lower to the upper reel, after it has been shown.

The motive power of movie projectors is almost invariably electrical, and motors are available for use with both alternating and direct electrical current.

Some projectors are provided with still picture attachments, so that the motion of the film can be arrested, and a single frame can be shown on the screen. When one of these is used, a shutter that provides protection against heat usually drops down, automatically, between lamp and film. However, in using projectors with powerful light sources, one should not keep the film in the "still" position too long.

Many machines also have a reverse motion control, which enables the film to be run backward or forward at will. This

feature is especially valuable, in editing. Projectors are available in many sizes; some of them offer interchangeable lamps as well as a choice of lenses. Flexibility is desirable when a single machine must serve small and large audiences. The more powerful the lamp, the larger the image it can project. If only a small image is needed, a powerful light source is neither necessary nor desirable. Projection lenses of different focal lengths (a term that is discussed in Chapter XV) enable us to produce an image of the right size, to fit the screen that is used, at any distance.

Good results in projection are to be had by following carefully the manufacturer's instructions, as to operation and care. So that no annoying interruptions may occur in the screen presentation, pay particular attention to threading the projector carefully, making sure that film perforations are meshed correctly with the teeth of the feed and takeup sprockets. See that the film is correctly seated in the film channel at the gate. Pay particular attention to a careful focus of the projection lens, and check this focus frequently during the course of the film showing.

Most projectors have a protruding knob, by means of which the mechanism may be moved slowly by hand. Turning this will show whether the film is engaged properly with the various parts of the mechanism. Watch the takeup spool especially, to see whether it is receiving the film properly; this care will obviate a tangled coil on the floor.

*Screens*

The projector produces a picture by focusing an image sharply on some kind of reflecting surface. The more efficiently this surface reflects, the more brilliant will be the picture. It is, of course, possible to project pictures on a cream colored window shade or on a smooth, painted wall, but such surfaces are inefficient reflectors of light, and, therefore, they produce dim pictures. Wrinkles in these surfaces distort the

motion picture image. A picture that is projected on a sheet or on an ordinary cloth will suffer in brilliancy, because light is lost through the translucent textile.

Special, opaque projection surfaces are offered, to enable the user to get the most from his projector. These are found in three basic types: (1) the matte, white surface; (2) the silver surface and (3) the glass bead surface. All these are efficient reflectors, and they give good results, but the glass bead surface offers probably the greatest direct reflection. The silver surface and the matte, white surface follow in order.

Screens of much direct reflecting power usually provide a less brilliant image, as one views this from an angle. Such screens are at their best when they are seen from a position that is nearer to the projector lens. If the audience can be arranged in a narrow group, extending in the direction of the projector's light beam, surfaces that give much direct reflection are excellent. If the audience must be spread out on each side of the screen, a matte, white surface may be preferable, because of its diffusive qualities, which reflect the image at an angle. The physical forms in which screens may be obtained will be discussed in a later chapter.

It is not good projection practice to try to produce a huge image for a small group of persons seated near the screen. Not only does this image impose a greater strain on the eyes of the audience, but also it magnifies any defects in the footage. The effect of natural perspective in a projected picture, for such an audience, is obtained from a smaller screen image, rather than from a large one. The use of high powered lamps, to produce small projected images, is not advisable, as many of the delicate, high lighted details will be "washed out." High powered lamps are best used to show large pictures to large audiences.

*Essential things to remember in using camera, film and projector*

CAMERA

1. Clean the camera gate before threading.

2. Run the camera a second or two with the cover off, to see that it is properly threaded.
3. Make sure that the cover is locked.
4. Set the footage meter, if it is not automatic.
5. Set the diaphragm for the light conditions.
6. Focus for distance, if a focusing scale is provided.
7. Hold the camera steady.
8. Keep the camera cover closed until the entire film is exposed.

FILM

1. Don't let the film become loosened on the spool.
2. Load and remove the film in shade, wherever this is possible.
3. Make sure that the film is exposed before inserting it in the mailing carton.
4. Make sure that your return address is marked on the mailing carton.

PROJECTION

1. Clean the projector gate before threading.
2. Turn the projector mechanism over by hand, to check threading.
3. Make sure that the end of the film is attached to the takeup reel hub.

## CHAPTER IV

## BASIC CAMERA TECHNIQUE

TO RECORD an image on movie film that will, when it is projected on a screen, represent clearly and realistically what you saw in the viewfinder of your camera demands early consideration of the problem of exposure.

This term, as it is used in movie making, refers to the quantity and duration of the light, reflected from the subject, that is permitted to reach the film through the lens. These must be determined precisely, if the resultant image is to be entirely satisfactory. Therefore, the correct exposure of any film to the light that will affect it is the first important phase of camera technique.

To realize the importance of exposure, we have to remember that, since light affects film, in the process of recording an image upon it, this effect can be either too great or too little. If it is to be neither of these, but, instead, one that will accomplish exactly what we want, both the quantity of light and the time in which it is permitted to affect the film must be controlled.

The sensitivity to light of the film that is threaded in your camera remains constant, while the lens records images upon it. Therefore, changes in exposure must be controlled by mechanical adjustments of the camera itself. So that these adjustments may be determined and made, according to a convenient system, not only has the design of lenses and lens diaphragms been standardized, but, also, a uniform method of light measurement has been devised, to facilitate an accurate

statement of the exposure, requisite for a particular scene.

Although the failure to give a scene its correct exposure is all too common and although some deviation from the ideal may even be tolerated, we must never forget that good movies call for perfect exposure.

Footage that is recorded when an insufficient amount of light has reached the film is said to be underexposed, because more exposure should have been given, to affect the film to its most efficient rendition. An underexposed picture is usually dark and is devoid of detail, when it is projected on the screen. The scene appears to have been dimly lighted, and, from a practical viewpoint, this is exactly what happened. (See the illustration on page 28.)

If too much light is allowed to reach the film, a condition known as overexposure results. This produces a picture that is also without detail, but, in this case, the image is usually pale and light, instead of being dark, as in underexposure. (See the illustration on page 28.)

Severe overexposure produces a length of film that is almost transparent, while the same degree of underexposure will make it dense and practically opaque. In both instances, details are missing, and the result is obviously unsatisfactory.

Since it is necessary to control the amount of light by which the image is recorded on the film, a mechanical device for increasing or reducing the opening through which light passes is needed. This opening must be related to the lens which collects and directs the "stream" of light that is reflected from the subject.

Footage showing action on the screen, that occurs at the same speed as that of actual life, is generally filmed, in silent movies, with the shutter of the camera revolving sixteen times a second. This rate of revolution, with its consequent exposure of sixteen movie frames in each second, is known as normal camera speed. Because the great majority of the situations that are recorded in movie making are those in which action,

on the screen, should be neither faster nor slower than that of actual life, some movie cameras can be operated only at normal camera speed. Therefore, in these instruments, the time of exposure for each frame is constant.

Other movie cameras offer the facility of controlling the time of exposure, either by making it possible to change the size of the shutter opening or, as is done in most instances, by providing changes, at will, in the speed of revolution of the shutter. If the time of exposure is modified by the speed of revolution of the shutter, the action, as it is observed on the screen, when the projector is operated at a rate of sixteen frames a second, will appear to be slower or faster than that of actual life.

*Diaphragms and apertures*

Because of the fact that most movie cameras can film action, at rates, different from normal camera speed, only by the sacrifice of the natural appearance of this action on the screen, we must, in the majority of cases, control light in movie making by changing the diaphragm, or aperture, of the lens.

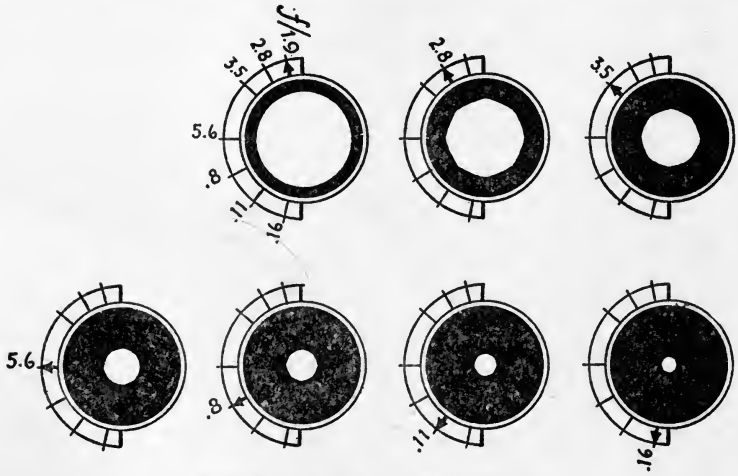
The diaphragm is a mechanism in the lens, by which the stream of light may be increased or diminished, much as a valve controls the volume of a stream of water. In mechanical principle, the diaphragm is not unlike a valve, for, by moving a control ring or lever, we are able to change the size of the opening through which light passes.

Since any type of film is designed always to have the same speed, or sensitivity to light, and since exposure changes are accomplished by increasing or diminishing the light that is admitted through the lens, some universal system for measuring those changes on the valve, or diaphragm, is an almost imperative convenience. This is provided by the calibration of the lens's control lever or ring into divisions, known as "stops" or "stop numbers," which are definite units of measurement of the amount of light that passes through a lens. These units

are standard and are generally accepted, just as are gallons, pounds or feet.

The letter "*f*" is used to identify stop numbers, and most lenses employ a system of marking stops in which the letter "*f*" is used with a number, as, for example, *f*/16. The stop *f*/16, to use it as an illustration, would always admit the same amount of light, regardless of the size of the lens on which it was calibrated, and *f*/16 on the small lens of a movie camera means the same thing that it does on that of a giant, studio still camera that is used with film, eleven by fourteen inches in size. The "*f*" system has been accepted as a universal method of calibrating lenses.

The most usual method of marking lenses spaces the calibration divisions, so that each indicates approximately a one hundred percent increase in light, as the diaphragm is opened from one *f* number to the next. A typical set of stop numbers which would result, for all practical purposes, in a one hundred percent increase, or in doubling the amount of light, as the diaphragm was opened from one stop to the next,




A Diaphragm and Its Stops

would be as follows: *f*/16, *f*/11, *f*/8, *f*/5.6, *f*/4, *f*/2.8, *f*/1.9. A very important peculiarity of this traditional method of expressing stop numbers is found in the fact that the *largest* number indicates the *smallest* diaphragm opening, and vice versa. (See the illustration on the preceding page.)

While this system is widely followed, there sometimes will appear certain deviations from the regular progression of the one hundred percent increase in stop numbers. Such an example is found in the popular lens whose largest aperture, *f*/3.5, falls between the familiar *f*/4 and *f*/2.8. For purposes of exposure calculation, this stop is commonly said to be half way between the other two. Further figures, which do not match the set that we have used as an example, would be *f*/2.7 (for practical purposes the same as *f*/2.8), *f*/4.5 (very close to *f*/4), *f*/1.5 (about a half stop faster than *f*/1.9) and others whose proximity to the stops that have been listed will be obvious to any camera user.

Lenses are generally identified, as to their speed, by the stop number that indicates their largest diaphragm opening. Thus, *f*/1.9 is the largest diaphragm opening of the fast, *f*/1.9 lens, while *f*/3.5 is the largest diaphragm opening of the *f*/3.5 lens.

Although the best results are produced by accurate exposure, black and white movie films permit much latitude, and one may make an error of as much as two stops, from the ideal exposure, in setting the diaphragm, without producing a result that may be regarded as a failure.

Nevertheless, we should seek the exact amount of exposure in every instance. When one is working with color, it is doubly important to make sure that the amount of light which is admitted through the lens is correct, for color film does not permit so much exposure latitude as does black and white film. An error of one stop will make a real difference in the rendition of color values. Underexposed shots are dark, and their colors are muddy, while, in overexposed color shots, colors are

pale and thin. The right exposure, only, gives the real color values.

*Determining exposure*

Deciding upon the correct exposure and setting the lens diaphragm accordingly is a task that the movie maker must perform for every scene he records. However, there are many aids to simplify the process.

First, there is the exposure chart or calculator, that is found on certain cameras. In some cases, this is a plate on which are described basic conditions of weather or light, such as "average scenes in direct sunlight" or "subjects in deep shade." The diaphragm actuating lever may be placed so that it points to one of these notations and, at the same time, to the proper stop number for this condition, so that one may adjust exposure without reference to *f* numbers, if he desires.

Another type of calculator is slightly more comprehensive and complicated, for it may take into account different periods of the year, types of film and various camera speeds. Whatever the calculator on your camera may be, you can be sure that it presents a dependable method of exposure estimation and that it will serve you well, once you have learned to recognize its concise descriptions of light conditions.

One also may buy simple and inexpensive detached calculators which operate in much the same manner as do those that are placed on cameras. Often, these devices include a wider range of variables than we find on calculators that are installed on cameras, for there is more room to expand the descriptions of light conditions and to note exceptions to the basic rules. The more elaborate of these may have sliding dials or scales, which enable one to arrive at a lens setting, by correlating, swiftly and easily, the various facts observed by the user.

Exposure may be determined by estimation. We look at the scene and set the diaphragm by judgments that are reached

from our previous experience. The movie maker who has taken pictures for some time, and who has kept accurate records of exposure for typical light conditions, can get excellent results by this method. This procedure is impractical for a person who is just embarking on his movie making career.

*Exposure meters*

The method of arriving at correct exposure which requires the least individual judgment is that which involves the use of an "exposure meter," a device designed to measure the amount of light that is reflected to the lens from the desired scene and to determine for you the proper diaphragm setting. The accuracy with which meters will reveal the correct exposure depends, to a large extent, upon the skill of the user. To operate a meter, it is necessary to know the speed, or sensitivity, of the film to be used. Most meters may be adjusted for different sensitivities; the adjustment is made from data supplied by the manufacturer of the instrument.

The simplest meter is of the extinction type, which depends for its functioning upon the comparison of a fixed scale of numbers or other markings with another scale of numbers or gradations that change with the amount of light that affects the mechanism. A specific example is offered by a meter which is held to the eye, while a part of the device is rotated until one of several numbers is barely visible. This barely visible number is then set on a chart, by means of which the recommended stop number is found. While such meters are generally satisfactory, they depend upon the human element to a marked degree.

Persons with not entirely normal eyesight might get readings that differ from the correct standard for a given light condition. Reading an extinction meter is influenced by the involuntary adjustments of the eye to bright or dim light.

When the use of the photoelectric cell became widespread, it suggested itself as an ideal instrument for measuring light,

since photoelectric cells have the property of generating minute amounts of electricity when they are affected by light, more current being generated by greater illumination.

These cells were harnessed in meters which indicated accurately the amount of light that affected the meter itself. It was but a step, then, to transpose these readings into stop numbers and thus to produce a thoroughly workable exposure meter for cinematographic use. Fitted with dials and film speed indications, these meters are today immensely popular, for they enable anybody to solve the exposure problem without skill or technical ability.

The standard type of photoelectric exposure meter indicates the amount of light that is reflected from the prospective movie scene. However, its reading represents the *average* amount of light that is reflected from the *whole* scene, which may be composed of very dark subjects, reflecting little light, and very brilliant subjects, reflecting much.

The exposure should be adjusted for the *important* subject in the scene, and, therefore, it is often necessary to hold the meter close to that subject, to register the light that it alone reflects, without consideration of the amount of light that may be reflected by adjacent objects.

Another factor is the possibility that the exposure meter may cover a wider area than that which is covered by the camera's lens. For this reason, too, it may be necessary to step closer to the subject, in taking the reading, or to tilt the meter downward.

For example, a prospective scene might include a dark meadow in its lower half and a brilliant sky in its upper half. The subject of interest is in the lower half of the picture; so we should tilt the meter slightly downward, to exclude a large part of the sky from its field. Otherwise, the brilliant light from the sky would increase the meter reading, so that a small diaphragm opening would be indicated, and this, in turn, would mean that the meadow in the picture would be underexposed.

The proper technique of taking a reading under such conditions would be to tilt the meter downward gradually until the sky was excluded sufficiently, to cause the needle on the meter's dial to drop sharply. The reading that was taken just after the needle had dropped would be correct.

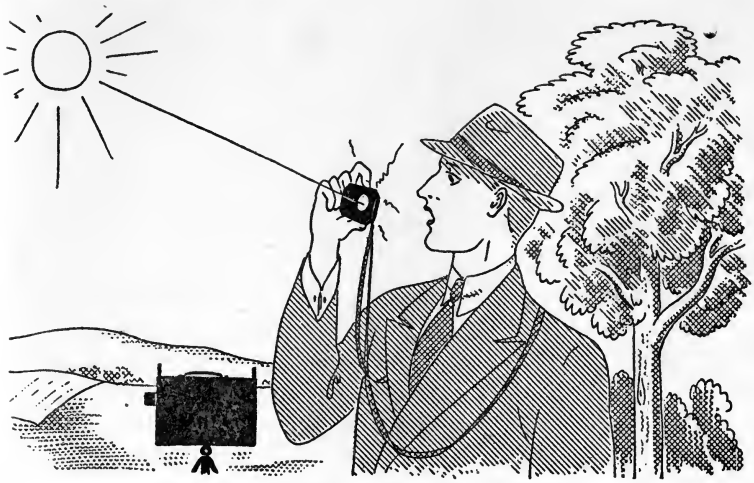
If the scene were light, such as a bright expanse of snow or water, and if no dark details were desired, it might be satisfactory to take the average reading of the entire scene from a normal meter position.

On the other hand, if one were filming at the beach and if the scene happened to be a close shot of a girl wearing a large hat and a white dress, it would be important to hold the meter within a few inches of the girl's face, to get an exposure reading on it alone, for her countenance would be in a shadow, while the rest of the scene would be brilliantly illuminated. If the meter reading for this scene were taken from the camera's location, the bright sky, the white sand and the white dress would tend to produce a high reading, which would indicate a small diaphragm opening; this would result in underexposure for the flesh tones, which are darker in color and which are also in the shadow of the hat.

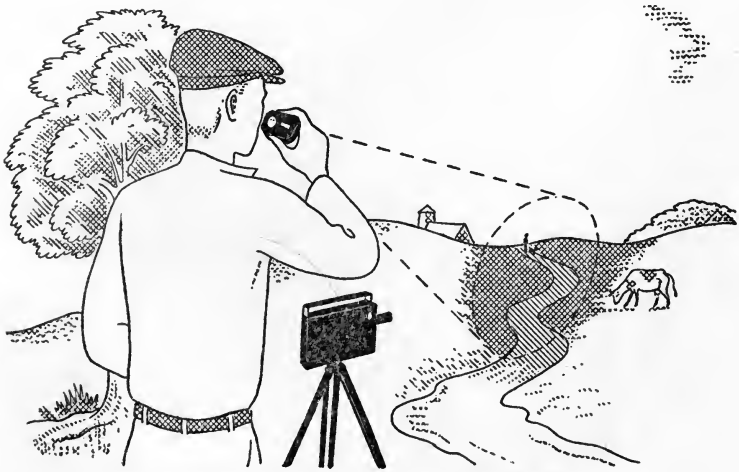
The following illustrations show how these and similar principles of meter use are easily applied, in getting an accurate exposure reading for the important part of the subject.

Setting the film speed dial correctly is highly important in the operation of any exposure meter. Before you take a reading, be sure that you know just how to adjust this dial for the film that you will use. Do not rely on speed ratings that come from any source other than the manufacturer of the meter or the Amateur Cinema League, for not all systems of film speed rating are standardized. Manufacturers of meters are glad to give you this information; it may also be secured from the League at any time.

Once you have learned to use a meter, following its manufacturer's instructions, rely on it constantly. You will know its



Sunlight falling on the face of the meter will cause a false reading.

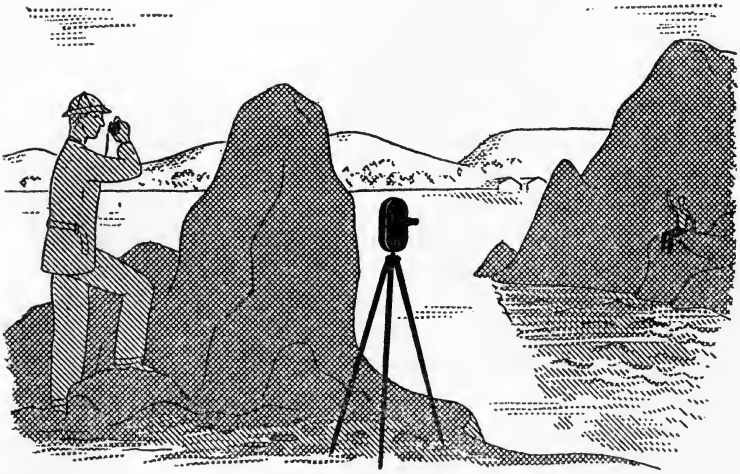


For landscape shots, tilt the meter, so that most of the sky will be excluded.

If the camera is in the sun and the subject in shadow, go close enough to get a reading in the dark area.

The overhead sun gives strong shadows. Hold the meter close to the subject's face, for a usable reading.

The sign is the important thing; go close, to eliminate the dark area surrounding it.



A reading on the adjacent rock will indicate the exposure for the more distant, similar subject.

advantages and limitations, and, as a result, you will improve your method of taking readings, so that the meter will become a highly accurate and easy guide, for use in exposure determination.

Since color film has less latitude than black and white emulsions, one must be more careful, in taking readings for use with it, than in taking those, to be used with monochromatic films. While exposure meter technique for Kodachrome does not differ from that for black and white film, it must be followed more carefully.

If one judges exposure for color film by observation of the light on the scene, he must be careful to take into consideration the direction of light, the time of day and other factors, explained by the film's manufacturer in the leaflet that is supplied with each roll. This leaflet gives exposure directions for typical lighting conditions, which may be memorized easily, if one does not care to use a meter.

An exposure difference of half a stop does not have an appreciable effect on the average black and white scene, but it may make a noticeable difference in the shades of color in a full color view. Hence, many of the tables and charts prepared for guidance in color film exposure have variations of half stops. Although there may be no markings on the lens between stop numbers, one may still set the diaphragm for this half way position.

One of the handicaps of a new movie maker is the great amount of well meaning advice about exposure that may be given to him by acquaintances. On his trip to the tropics, he will be bombarded on every hand by "tips" from "old timers" to the effect that the light is "tricky."

Actually, he has no need to change his exposure estimation method when he goes to the tropics. He will find light conditions there, much like those to be encountered on his own bathing beach in summertime. Advice to "use filters because of the glaring light" would apply equally, if one were to film

on the sands of almost any shore. The best advice about exposure for the visitor to the tropics is to take none from photographers or from inexperienced movie makers.

Another handicap is found in the person who believes that an exposure meter manufacturer errs in advising a certain speed for a particular film. Such an individual may have had an isolated experience which indicates that the speed that is given by the manufacturer does not work well with his particular equipment, but such experiences, even if they happen, by chance, to represent facts in a certain case, do not apply to others. Always use the speed that is given by the manufacturer of the meter, unless yours happens to be one of the very rare cases in which fair and careful tests prove that it is not correct for you. In that circumstance, of course, you will change the rating, to fit your needs. In a few instances, changes are desirable, but they never should be made on the advice of others whose equipment and technique may differ from yours.

Exposure estimation is not so difficult as one might think. Half the battle lies in learning to recognize correct exposure when you see it. A ready knowledge of this may be gained by looking at good photographs that are reproduced in the better magazines and books. Note that these have no glaring, washed out parts and no dark, muddy areas. The overall tone is a pleasant compromise between black and white.

One of the best ways to improve your ability to judge light is to keep records of the conditions under which you expose your film and to consult these records when you first project your processed rolls. In a short time, you will build up an instinct for exposure and will know, at a glance, whether a scene could have been improved.

If you employ the calculator system of exposure estimation, it is important to learn to classify light conditions into the categories that are listed on the device. These are well defined and are easily recognized.

*Focus*

Everybody who has used an opera glass or field glass knows what is meant, in general, by the term "focus." With the opera glass, the image is formed in the eye, while, with the camera, it is formed on the film's surface. Just as field and opera glasses must be adjusted, to get sharp images of subjects, far and near, so must the camera lens be regulated, if we are to secure clear and sharp pictures.

Some lenses, those of the "fixed focus" type, are preset during manufacture in such a way that they will render sharp images over a reasonable range of distances without requiring a special adjustment for each scene that is recorded. These fixed focus lenses are generally of the slower variety—the type which does not pass a great amount of light, as compared to the fast lens which passes a large quantity of light.

Since the focus of a lens of this type must be a compromise, in order to cover a useful range, it follows that such a lens must have some limitations. One of these is its slower speed and the other is the fact that with it, alone, you cannot get a sharp picture of subjects that are within six feet of the camera. For pictures made at distances closer than six feet, one requires a "portrait attachment," a special lens to be placed over the camera lens itself.

The chief advantage of the fixed focus lens is that, in using it, one need not pay attention to the exact distance from camera to subject, if this is greater than six feet. In recording subjects that are constantly moving, it is helpful to be able to film them without stopping the camera, to set the lens for a sudden change of distance.

In contrast to the fixed focus lens, we have the focusing type, which requires the same adjustment as does the opera glass. It differs from the lens of the opera glass, because the focus of the movie lens is secured by the adjustment of a calibrated ring, while the opera glass is focused only by visual inspection. This calibrated ring is marked with a convenient range

of distances that are stated in either feet or meters, depending upon the system that is in use where the lens is sold. Markings generally start at two feet and continue, by steps, up to fifty feet. After this, we find "Infinity," in most cases, which setting is correct for all distances of more than fifty feet from the camera. Telephoto lenses may have calibrations which reach one hundred feet or more, before the Infinity mark is reached.

It is not difficult to guess the distance from camera to subject with sufficient accuracy that we may set the focus, to produce a sharp picture. The leeway in range, within which one can get a sharp picture, is generous, especially if we use small diaphragm openings (*f*/5.6 to *f*/16) and if our subjects are more than ten feet from the camera. Accurate distance determination is important at the closer ranges and, particularly, if the lens is opened to apertures from *f*/3.5 to *f*/1.4. A tape measure is a valuable aid in measuring distances for close scenes.

Range finders or distance meters are convenient accessories that are used for determining focus, because they give an accurate indication of the distance from camera to subject and because they are easy to use.

Where to set the focus for pictures of action in which the subject approaches the camera from a considerable distance may puzzle the novice. The best rule for shots like this is to set the lens for one third of the distance from the nearest limit of the range of action to the farthest. Thus, if the subject that is moving toward the camera were to be filmed, first, about fifty feet away and were to approach to twenty feet, the lens should be set at thirty feet. Sharpness would then be satisfactory throughout the range of the subject's movement.

If one is filming a stationary subject, such as a grove of trees, with extensive range in depth, the same procedure could be followed, and the whole scene would be in satisfactory focus.

As with exposure, there is a reasonable and helpful leeway in focusing. This comes from what is called "depth of field." This phrase describes the area extending in front of the lens, within which objects will be recorded in the picture clearly and sharply, if they are filmed at a given diaphragm opening and a specific focus setting. For example, when the lens is set for ten feet at a certain *f* number, we find that objects that are nearer than ten feet and farther than ten feet are yet in satisfactory focus. The distance from the near limit of this range of sharp focus to its far limit is the depth of field.

Two factors control this distance. One is the size of the stop, or diaphragm opening, and the other is the distance at which the lens is set. The larger the lens opening and the shorter the distance, the shallower is the depth. The illustration on page 62 clarifies this point. The depth of field varies with the focal length (a term that is discussed in Chapter XV) of the lens and it is not the same for all lenses of equivalent speed.

*Scene lengths*

The question, How long should a scene be? need not puzzle any movie maker. An average scene runs about ten seconds, which means four feet of 16mm. film or two feet of 8mm. film. Shots of important action may require much more footage—enough to show the completion of the action—while other scenes, that will convey a single idea, may require much less—for example, a shot of a route number sign along the highway. When you are in doubt, take plenty of footage.

The footage meter on your camera may be used to determine how long the scene is running, if the camera is placed on a tripod, but, if the camera is held to the eye, you may not be able to see it. In that case, one may count slowly: "One thousand and one," etc., each number representing one second of screen time. Counting in this way, slowly, to ten would give you about four feet of 16mm., or two feet of 8mm., film.

Keep the camera running continuously until the desired footage has been recorded. Guard against starting and stopping the mechanism while you are filming the scene, for such interruptions in the action result in unpleasant breaks in the picture. They are akin to closing the eyes, while we are watching some particular action, and opening them an instant later.

*Camera movement*

The beginning movie maker may be puzzled by the number of times that he will encounter the advice, "Hold the camera steady!" But once he has seen the jiggly and scarcely recognizable pictures that are produced by an unsteady camera, he will realize the importance of this basic rule.

If you are to hold the camera in your hands, take a comfortable position, keep the camera as motionless as possible and press the button. Don't move the camera while it is running. Then you will see a steady picture on the screen, instead of a dizzy whirl of unrecognizable subjects. The audience can concentrate on the subject matter, not on the dancing scene.

In shooting scenic and distant views, you may be tempted to swing the camera horizontally from one side to the other; in the resultant action, on the screen, the scene will rush past like the telephone poles that are seen from the windows of a speeding train.

Pivoting the camera horizontally in this manner is called "panning"; this is a practice to be avoided, as you would avoid an underexposed or out of focus shot. It can be acceptable, if you "pan" exceedingly slowly and very smoothly, but more film is used than would be employed, if you filmed a number of separate, steady scenes. These would also be much more attractive on the screen.

The utility of the panorama is chiefly apparent in following moving objects. In doing this, one must center the subject

to be followed, in the viewfinder, and must keep it centered there. Of course, the background rushes past, but the attention of the audience is fixed on the moving subject. This technique, requiring considerable adroitness, may be seen in theatrical newsreel shots in which the camera follows a horse on the race track or a football player making a long run.

Swinging the camera vertically is called "tilting," and a slow, steady tilt in one direction, either upward or downward, is less objectionable than a panorama, if the camera is held stationary for a few seconds at the beginning and at the end of the tilt. For example, one might tilt, from the brink, down a waterfall to a view of the churning water at the base. In tilting, one should always reach the top, as of a church spire, or the bottom, as of a canyon, to satisfy the natural curiosity of the audience.

*Camera speeds*

While film passes through movie cameras, usually, at the rate of sixteen frames a second, some of them are so designed that this speed may be altered for special reasons. Running the camera more slowly than is normal gives us action, on the screen, which is faster than that of the subject. The commonly used slow speed is a rate of eight frames a second, or half the normal camera speed. When shots that are made at this speed are screened at the regular projection rate of sixteen frames a second, the action is just twice as fast as that of the subject. Similarly, camera speeds, greater than the normal, will retard the motion on the screen, as compared with the real action. The usual range of camera speeds comprises eight, sixteen, twenty four, thirty two and sixty four frames a second.

Slow motion, which is produced by a higher camera speed, is useful in making shots that enable us to examine action which, in actual life, occurs so rapidly that one cannot analyze it. Slow motion lets you study your golf stroke, to detect pos-

sible defects; it permits coaches to study details of form in athletics.

By means of slow motion, one may extend on the screen the duration of action that takes place in a very short space of time. The diver, filmed at usual speed, is just a flash on the screen, but, when he is filmed in slow motion, the audience can see the grace of the dive. Filmed at normal speed, a bird might dart on and off the screen so rapidly that the audience could scarcely observe it, but slow motion would increase the length of the shot and enable us to see the bird clearly.

Slow motion also has the capacity of "smoothing out" the effect of camera unsteadiness that might be encountered, for example, in a scene that is recorded by a camera held in the hand on a moving vehicle, for the reason that, just as slow motion retards, on the screen, the action of the subject, so it also retards the movement of the camera, giving its sudden shifts of position less effect in the projected picture. A further interesting use of slow motion is to impart an effect of weightiness or ponderability to models in miniature shots. Other uses of slow motion will be discussed in later chapters.

Half speed, or eight frames a second, has a more limited range of usefulness. Its chief function is to provide greater exposure time for each frame, by increasing the period in which the shutter remains open. This increased period is especially valuable with poor illumination, for it allows twice as much light to affect a frame of film as would reach it at normal camera speed. Half speed is most helpful when the subject is relatively static, for, of course, doubling the rate of motion might prove unattractive in some cases. In fact, half speed is sometimes used for a comic effect.

While a camera speed that is less than normal *increases* the amount of light that is admitted to each frame of film during exposure, a camera speed that is higher than normal *decreases* the amount of this light. If the camera is running at thirty two frames a second, just half as much light is ad-

mitted to each frame as would reach it, if the camera were operated at sixteen frames a second.

Hence, to compensate for this decrease in light, we must open the lens diaphragm by one stop, which doubles the amount of light admitted. Similarly, if the camera is operated at sixty four frames a second, just half as much light is admitted to each frame as would reach it, were the camera running at thirty two frames a second, and so, to compensate, we must open the diaphragm by yet another stop, making a total of two stops over the normal exposure for the scene.

Adjustment of exposure to compensate for change of camera speed may be reduced to a simple table:

| | | | | |
|---|---|---|---|---|
| 8 | frames | a | second | —one stop less than normal exposure |
| 16 | " | " | " | —normal exposure |
| 32 | " | " | " | —one stop more than normal exposure |
| 64 | " | " | " | —two stops more than normal exposure |

For a camera speed of twenty four frames a second (used principally for "sound on film" movies, that will be explained in a later chapter), the lens is opened one half stop over the normal exposure.

*Light and shadow*

Light makes the picture, for it is light that affects the emulsion of the film and produces the image. Light also makes the picture in another sense, because it is the high lights and the shadows that add depth and interest and that give to objects in the scene an effect of roundness and modeling.

How these important high lights and shadows are formed in a picture depends upon the direction of light; to get the best movie shots, we must control the angle at which light falls on the scene.

In outdoor filming, we cannot shift the sun, but we can control the camera viewpoint in relation to sunlight, which gives us almost as much freedom as if we could change the direction of the sun's rays at will. So, when we select a camera

viewpoint, we consider not only the subject matter, but also the direction of the sunlight that falls on the scene.

Light may reach a given scene from an infinite number of angles, but, for the purposes of movie making, the relationship between the subject, the camera and the direction of light can be divided into four main classifications.

Of these, the first is "flat lighting," in which the illumination comes from the rear of the camera and falls flat on the front of the subject. This produces the minimum effect of high light and shadow, for, as they are seen from the camera's point of view, all the contours of the subject are evenly illuminated. Features do not stand out, because there are no shadows to emphasize them.

But suppose that we shift the camera, so that the sunlight strikes the scene from one side. Then we have what is called "side lighting," and, from the camera's viewpoint, the light will cast shadows—one side of the subject will be high lighted and the other will be in shadow—which will give to the scene an effect of depth and brilliancy.

The more directly the light comes from one side, the stronger this effect will be. In fact, one side of the subject may be too brightly illuminated and the other side may be in too dark a shadow. This condition can be corrected by the use of a reflector, to throw additional illumination on the shadow side of the picture.

However, the average movie maker corrects the difficulty by moving slightly to one side or the other, to get the light at an angle of about forty five degrees, in relation to the axis of his lens. Hence, sunlight will fall from one side and slightly to the rear of the movie maker, as he faces the scene. This type of lighting is the standard for movie shots; it is always easy to find, except in late afternoon or early morning.

When the sun is directly behind the subject, the effect is called "back lighting," a beautiful and dramatic type of illumination that must be handled with caution. The shadow

side of the subject is toward the camera, and, if exposure is adjusted for the illumination around it, the subject itself will be silhouetted. This lighting may give an attractive result, as in the scene of a grove of trees silhouetted against the late afternoon sun.

If details are to be seen, the lens must be opened for the proper exposure of that side of the subject which faces toward the camera. Then, the subject seems to be surrounded by a halo of light—a charming result in some cases. The classic instance is a close shot of a girl, filmed with the sun behind her head, so that the light "catches" in her hair, giving it a luminous quality.

In all back lighting, one must be exceedingly careful, lest the direct rays of the sun strike the lens and produce lens flare, the result of internal reflections within the lens elements. One must shade the lens from these direct rays. This shading may be accomplished by the subject, which may cast a shadow over the lens, but usually it is necessary to protect the lens itself, by holding something above it. Of course, one must not obstruct the view of the lens and, thus, cut off a corner of the picture.

When the sun is directly overhead, the scene is said to have "top light." The results that are obtained by this form of lighting are, almost without exception, unpleasant; hence the midday period, when the sun is almost directly overhead, is not a good time for movie making. Unpleasant downward shadows are cast on faces, and landscape views are uninteresting.

When the sun is overhead, scenes of a person who wears a wide brimmed hat will be particularly unfortunate, for deep shadows under the hat will obscure the face. If exposure is increased to give proper detail in this heavy shadow area, other parts of the scene may be greatly overexposed.

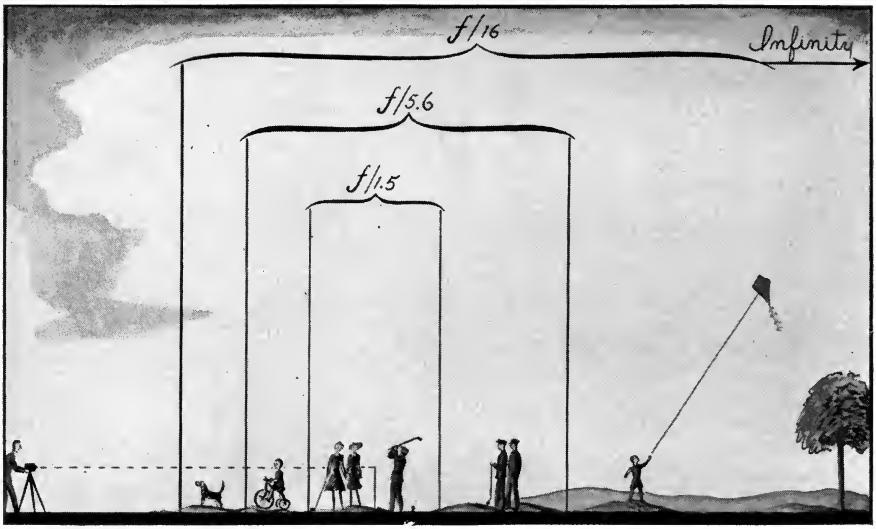
Flat lighting, which produces an unattractive scene in black and white movies, is ideal for shots that are made with color

In Focus

Out of Focus

R. I. Nesmith and Associates

A focusing lens set for closeups would give the unpleasant effect shown in the bottom picture.




The size of the diaphragm opening affects the range within which subjects will be sharp in the picture. Above, a camera equipped with a normal lens is focused on the golf tee. The parentheses illustrate the range of sharpness at various stops. One can see how much larger this range is when the diaphragm opening is small.

Mrs. Warner Seely, ACL

If a bird nests near your home, you have material for an outstanding film. (16mm. frame enlargement.)

Donald A. Buchan, ACL

In years to come, you will appreciate fully a movie record of your children. (8mm. frame enlargement.)

film. This is true, because, in color pictures, the effect of modeling and plasticity is produced by the variation of the colors themselves, and not necessarily by light and shadow. Also, flat lighting illuminates all parts of the subject evenly; therefore, all colors are reproduced with similar intensity. If the exposure is correct, every color will be equally brilliant on the screen.

Make a practice of watching the direction of light; note how shadows fall, in relation to your camera position, and soon you will judge lighting for movie scenes as automatically as you estimate the interest of the subject matter. Furthermore, you will find that you begin really to see the full beauty of things about you.

Almost any picture is better, if it is made on a clear, bright day. When the sun is veiled by clouds, one can see at a glance that the landscape is flat and uninteresting. Scenes do not appear to have the life and brilliance that they achieve on a sunny, clear day. This is a fact, because, in effect, the lighting is flat and even, and there are no high lights and deep shadows to give interest to the scene. The camera records what the eye sees, and movie shots made on a dull day will lack the sharp contrast of scenes that are filmed when skies are clear.

*Selecting views*

You can make more attractive movies if you choose pleasing backgrounds for your shots. Shifting the camera's direction slightly upward, downward or to one side may mean the difference between a well composed and a commonplace view. When you look through the finder, to center the action, also note whether the background adds to the beauty of the scene or detracts from it.

A telephone pole, directly behind a person, will appear, in the two dimensional picture on the screen, to be growing out of his head. The horizon that neatly bisects your view and the trunk of a tree that cuts the scene vertically, through the center, will create an unpleasant shot, while a slight change

in camera angle will avoid these difficulties. By comparing various possible viewpoints, when you hold the camera to your eye, you can select the best.

A useful device is the inclusion of some object at one side of the foreground of the picture. It may be a tree, a boulder, the corner of a fence or a person; whatever it is, it will give to your movie scene the illusion of depth—the feeling that there is one plane behind another in the picture.

Movie makers often frame scenic shots with a foreground of tree leaves, and, when no tree is growing in the desired spot, they may ask a friend, who should stand outside the lens field, to hold a branch above the camera, so that leaves will fall within the scene area, to provide a natural foreground for the top of the picture.

Arches, corners of buildings, the hood of an automobile or the opening of a tent may help you to frame a scene or to provide a foreground.

When there is action in the foreground, the middle ground and the background of a picture, at the same time, the scene will have a considerable effect of depth.

If, in filming a ferry moving from a slip, you include a portion of the pier in the foreground, the relationship between the stationary object near the camera and the moving object farther away will give an illusion of the third dimension on the screen. If another vessel is moving in a different direction in the background, this illusion of depth will be astonishing.

Be sure to avoid camera positions in which an adjacent, rapidly moving body will cross the scene at right angles to the lens. The effect produced by this action is very much like that of the panorama—the scene dithers, as if one were trying to look through a picket fence while he walked rapidly beside it.

*Important things to remember*

There is a generous leeway in exposure with black and white film, but this is smaller with color.

Exposure meters are always helpful, but one may secure

very satisfactory results with the calculator or table method of estimation.

You do not need to make a change in your exposure technique if you are in the tropics.

If you use a fixed focus lens and if you film subjects within six feet of the camera, you must employ a portrait attachment.

Focusing lenses do not present a difficult problem, since the depth of field is nearly always great enough, to cover average errors in judging distance.

A steady camera is one of the most important aids, in securing good pictures.

When you are filming at half speed, caution subjects to move slowly.

Flat lighting generally gives truest color results but produces the poorest black and white pictures.

Forty five degree side lighting is a good standard for black and white scenes.

The best black and white and the best color shots are made in bright, clear sunlight.

An unpleasant background can spoil an otherwise good scene.

Never let a subject move at right angles to the lens, unless the camera is moved, to follow it.

## CHAPTER V

## FILM PLANS

IN Chapter II of this book, we considered the fundamental characteristics of good filming which make up a genuine movie. We met the simple but inescapable fact that a good movie must "be about something." It must, in other words, have a theme, or something to say. Without this core of an idea, even the best exposed footage is meaningless and incoherent.

We found that this characteristic of theme or coherence might be evolved from the simplest of situations—Baby having a bath, Sister shelling peas or Brother washing the car.

But how do we discover such a central theme and how can we develop it, once it is in hand?

An answer to the first query is to look for your theme in whatever interests you. This simple guide leads us to film the family. To say that the baby "interests" us is to put it mildly, but it does explain why there is more family filming than all other kinds combined.

But other people, other places and activities win our interest as well. A day at the beach, the mystery and beauty of the woods, clouds and water, or a brisk golf game—these things and countless others make up our life. Any one of them, or a part of any one, is the subject for a movie.

It is easy to choose the movie's subject, but the development of the theme as a movie continuity is more difficult. Subjects are plentiful and their essential high points are ob-

vious, but, when they are recorded, they may fail to make a good film that has a clear continuity.

One reason for this fact is that the movie maker may fail to realize that every interesting theme should have a beginning, or introduction, and a conclusion, or ending, as well as the central idea itself. Secondly, he may fail to see that each part of the picture—its beginning, middle or end—must be developed by a number of groups of scenes that are called sequences. Here is a fundamental characteristic of the motion picture.

*The theme*

To assure a satisfying treatment of one's central theme, the first and most important step is to examine carefully the theme itself. Why do we wish to film it? What are the high lights that attract our interest? What relationship have they to events that precede and follow them? And what significance has the event or object for us and for others? These are the questions that we should ask ourselves. The answers will provide suggestions for a suitable beginning and for a satisfying end of the movie.

Suppose that we wish to film a parade on Memorial Day. We might simply run a roll of film through the camera, taking shots of the parade here and there, as opportunity offered. But the result would not be interesting. We should not have made a genuine motion picture. For although it is *of* a parade, it is not *about* it! Such a film would have little more to say on its chosen subject than would a good selection of still pictures. Let us ask ourselves some of the questions that we have noted and, then, see what happens.

Number 1: *Why do we wish to film a Memorial Day parade?* An honest answer might well be: We wish to film it because Tom and Mary Anne (along with a hundred or more other children) are going to decorate their bicycles and ride in the line of march. Fine! At once, this suggests filming more than just the parade itself. Here, opened by our first simple

question, is a whole new aspect of the matter, and one that is well worth a little thought. We note—"Plan to get scenes of the youngsters before (and maybe after) the parade."

Number 2: *What are the high lights which attract our interest?* Well . . . plenty of them, it seems. Harold, an older brother who lives down the street and was "across" in 1917, is going to march with the American Legion band. Mother will be Compassion, or something, on the Red Cross float, and we know a lot of the boys in the Fire Department. Besides, it's a swell show and . . . Besides, nothing! These three answers already indicate new opportunities. We note, again—"Try for 'takes' of the band rehearsing, of Mother working on the float and of the boys shining the new engine."

Number 3: *What relationship have they* (the high lights) *to events which precede and follow them?* Oh, well, it looks as if we had already gone into that. But it does show that we were on the right track in our plans to shoot something of the preparations for the parade, instead of just the parade itself. Next question!

Number 4: *What significance has the event for us and for others?* And here our query does not mean simply interest (the family and friends) or appeal (bright flags, colorful floats and pleasing movement). It refers, more fundamentally, to that background of meaning, inherent in the occasion, which gives it emotional importance. What is Memorial Day? Why is it celebrated? A quick look at the encyclopedia fortifies our own hazy ideas on the subject: *Memorial Day,* it says, *May 30th in the North, a day set aside since 1868 in honor of those who fell in the Civil War. Since 1918, enlarged in scope to pay honor to all of America's war dead.*

Here, of course, is just what we are looking for as "significance," and here, as well, is the real source of a beginning and an end for our parade pictures.

In general, now, we begin to see our film plan shaping into something like this: (1) announce the subject (Memorial

Day) and suggest quickly its significance; (2) indicate briefly, as a bait to the audience for what is to come, how the occasion is observed; (3) build up interest in this observance, by showing widespread preparations for it; (4) present the central event itself, as effectively as possible; (5) sum up or conclude briefly, by tying this specific event once more to its general significance.

Here, in essence, is a fundamental film plan for a picture whose central theme is a Memorial Day parade. It begins somewhere, goes somewhere and ends somewhere. More important still, it has something to say and, in its carefully integrated development, it says this something with significant coherence. Kept in its present general terms, the same structural plan might well serve as a skeletal outline for any number of films of any number of subjects. All that it needs is a changed significance, to be embodied in different subject matter. But let us see how it might be interpreted specifically in our selected subject, the parade. Pencil and paper will now be of aid, and we find ourselves jotting slowly:

### Flags for the Fallen

This phrase might be a title for the whole picture, since it catches the essence of the day's observance. Although it can be changed easily later, it serves now as a convenient guide. (Note—look into possibility of double exposed wordings on a moving flag background.) With this in mind, how can we best carry out item No. 1, already discussed? An introductory subtitle seems to be most efficient, and we work out the following:

> *First conceived in 1868, Memorial Day was once an honor only to those who fell in the Civil War.*

This does it nicely (announces the subject matter and suggests its significance), and we "mull over" what few scenes

we might get, to represent this idea. Briefly, let us start with a full view of the United States flag, blowing out from its staff against the sky; we tilt slowly down the flagstaff, until the same shot discloses the serried ranks of gravestones in a cemetery; we go from this shot to a semi closeup, in which an old headstone fills the frame; a hand comes into view and lays a wreath on the grave; we go to a similar shot of the foot of the grave, as twin flags are inserted in the rusted iron insignia that mark a soldier's rest. This should be enough to give the idea of our introduction, and we move on in our development to item No. 2 (indicate briefly how the occasion is observed). Again a subtitle is called into play, this time for transition:

> *But now, since the greater battles of the World War, the day has grown to be a memorial to all of our country's soldier dead.*

As bait for what is coming, we jot down some less specific suggestions: run a series of three or four short scenes of the parade, or, if possible, stage a series of brief shots of Civil War, Spanish War and World War veterans. Since this footage is just a "hook" or "come on," make it short, and get on to No. 3 (build up interest by showing widespread preparations). A subtitle keys it:

> *A quiet holiday, it is shared in preparation by all in the community.*

Here, obviously, is the place for those scenes of Mother decorating the Red Cross float, of Brother Harold rehearsing with the Legion band, the volunteer fire crew shining the engine and children adorning their bicycles. There should be others, more impersonal, of the civic preparations along Main Street. There is chance here for human interest, good view-

points and carefully studied lighting, all building up to No. 4, the central event itself. Introduce it with a simple subtitle:

*And soon the great day dawns . . .*

Now for our pictures of the parade. Although we may have seemed to take a long time in getting to this, actually the introductory material which we have used will still be a definitely minor part of the film—running a possible twenty five to fifty feet, in comparison with the parade's hundred or two hundred. And this modest extra footage will be well worth the expense, in the feeling of roundness and importance that it imparts to the finished job. As for notes on what scenes to try for, at the parade, they cannot be specific, but we may set down a few generally effective ideas (that are discussed in full in Chapter X).

Now, we have to plan only a brief conclusion, to round out our preparations. We know that the parade will march to the cemetery for its final ceremonies; therefore, no transition by a title will be needed to follow the guidance of item No. 5 (conclude by tying the specific event once more to its general significance). Why cannot the closing scenes be simply an echo of the opening, but with the order of the action running in reverse? So, we have a long view of parade officials and others gathered in ceremony at the foot of the flagstaff; a medium shot, looking down a file of soldiers as they fire a salute; an upward angle shot, against the sky, of Harold blowing the bugle; hands lay a wreath and crossed flags on a grave; we go back to a longer view of the Legion band and then we make a slow tilt up the flagstaff that ends on the billowing flag, brilliant against the sky.

Here, then, in fairly full detail, we see every step of the way to develop the simple central core of an idea into a well rounded film plan. In review, these steps are: (a) select a theme or central idea which interests you; (b) examine or analyze this theme from the viewpoints of the four queries, already discussed; (c) in the light of your findings from this

examination, sketch a general skeleton of your film plan and then fill out this skeleton with as many specific scene notations as are needed.

The end product of following this method is called, in movie parlance, a "treatment outline." Although this may, by the experienced, be produced successfully in the mind alone, it is always better to work it out on paper. As may be seen in our example, such an outline sometimes will indicate the exact scenes that are needed and, at others, will endeavor merely to suggest the kind of thing to try for. The next phase of film plan development, beyond the treatment outline, is known as the "scenario," which is discussed in full in Chapter XIX.

When you film the plan, whether it is written in full, is expressed in a few notes or consists merely of an outline in your mind, you may not be able to get the exact shots that you planned to take. You may find that you will have to make compromises, because things seldom happen exactly as we picture them in advance.

Nevertheless, the plan will be invaluable. With its aid, you can produce a unified and interesting movie and, because you know what you are after, you can get the best shots that are available. You can take advantage of unexpected filming opportunities that may crop up, because you have a scheme into which they may be fitted, if they are suitable.

Since you know what you want, you can go about getting it with a minimum of bother, and you need not stop continually, to decide what you are going to film. Working with a plan prepared in advance is the easiest way to make a movie, and it is the way that makes the best movie.

*The basic scenes of silent movies*

In all film planning, the camera's position is an important factor. The conventional phrases that indicate what is included in silent movie scenes are given here with illustrations. They are not always applicable to theatrical talking pictures.

*Long Shot.* An all inclusive scene, in which the participating human subjects are visible as full length figures in the middle or background of the setting. Depending on the camera treatment, nearly any required number of persons may be included in the scope of a long shot. This type of scene has two chief uses: (1) to establish the setting and locale of more specific action which is to follow; (2) to encompass the range of sweeping or mobile action, such as men on horseback, an automobile on a highway or a ski chase across the crest of a hill.

*Semi Long Shot.* A scene, less inclusive than the long shot, in which the human subjects are still visible at full length and not in the foreground of the setting. A compromise term, semi long shot can be used to suggest a lesser scope of established setting or a narrower range of included action.

*Medium Shot.* An exclusive scene, in which the human subjects are seen in full length in the foreground of the setting, dominating it and just failing to fill the frame at top and bottom. This is the fundamental scene, by which all movie story telling, of general nature, is carried on. In it, once a subject has been registered with a closer shot, we can present character traits, plot developments and action. It is from the medium shot that one must work to the more limited and more dramatic close shots.

*Semi Closeup.* A scene, more exclusive than the medium shot, in which the included human subjects are seen from about the waist line to just above the head. More dramatic than the medium shot, the semi closeup can be used, to a certain degree, in story progression, if the camera position is properly taken. Each character should be identified, early in the film, with a semi closeup, and it is from this and the closeup that spoken titles are introduced.

*Closeup.* The most exclusive scene of all, in which one human subject is seen from about the shoulder line to just above the top of the head, completely dominating the picture. This is the fundamental dramatic scene. It is used to heighten dramatic effect, to show clearly the reaction of one character to another and to emphasize important objects, story developments or turning points.

## CHAPTER VI

## AROUND THE YARD MOVIES

THE new movie maker need not go far in search of something to film. Family and friends can be the first subjects, and his own back yard, the first movie set.

But we need imagination and a fresh outlook. These can come from careful observation of people and surroundings that are old and familiar commonplaces, but which will yield amazing movie returns, if we only look on them as an outsider might.

Regarding your family objectively, decide on the activities or interests, most characteristic of each of its members. Work out simple themes of action, based on these interests, and your films will ring true. Plan pictures about the hobbies and recreations of those who are closest to you, because their unself conscious absorption in these things will prove to be your finest filming ally.

How about Grandfather and his project of a pool in the yard, for fish? What about Mother and her garden? There is a natural pictorial advantage in a garden. Have you an archer, a croquet enthusiast or a quoit pitcher in your midst?

Let us look at Mother and her garden. Here we bring in little Mary Anne, who, like all toddlers, delights in copying her elders. Mother's simplest action, echoed in miniature, takes on new interest. Stress this dual action in your film plan.

Show Mother going into the garden, in her pretty flowered pinafore, equipped with trowel, shears and watering pot. Mary

Anne, bored by a picture book, has decided to help. She disappears indoors, and Mother works on. After a few moments, Mother looks up, in delighted surprise, to see her youngest coming toward her, also in pinafore, loaded down with her tiny tools.

Mother sets her at work at a safe and simple task. For a brief time, they both are occupied happily. Then, into the drive come two of Mother's garden club friends, whom she goes to greet. One of the visitors wants to see Mother's new method of setting out aster seedlings. Mother leads them proudly to the aster bed—only to find that Mary Anne has practically ruined the lot, because she thought that they were weeds.

For a fuller record of Mother alone, why not film her daily visit to market? Show her leaving the house in her car—you can get a good closeup, as she takes her place behind the steering wheel—and then, in a few shots, picture the car at different stages of her journey to market. It stops in front of a shop, and Mother gets out. You can include closeups of the fruit and vegetables on display at the shop entrance, as Mother examines them and makes her purchase. You have a natural film plan, if you but follow her progress.

After the day's marketing, Mother starts home determinedly. But she sees—insert a long shot of a beauty shop, a movie theatre or a window with frocks and furs—and is completely diverted from the homeward rush. We leave her there. Will it be the beauty shop or the kitchen range?

For a film of Father and the boys, there is baseball. Tommy gets, at last, the new pitcher's mitt that he has longed for, and, in the late afternoon, he and a friend are playing catch in the yard. Dad arrives and soon takes a hand in the fun; his pitching can either be better than it should be, or worse, depending upon your own ideas. In any case, the boys are delighted. They invite him to join Tom, next Saturday, at the ball field. A big game is on, and they need an umpire. Dad

appears, and, from there on, you can write your own—and Dad's!—finish.

Go out into the town, as well. Involve the public park, the zoo, a hockey game or a ski meet with your family and their fun. This works in winter, as well as in summer.

TIME. A wintry Saturday morning. The snow is nearly a foot deep, after a long fall.

PLACE. The back porch, as Dad starts off to his work and sees the drifted driveway.

PLAYERS. Dad, Mother and one or more children. Dad and Mother are on the porch, as he is about to leave.

He stumbles through the snow, toward the garage; he pauses, saying to Mother, "Tell Tom to shovel the snow off the drive and walks, will you?"

Mother nods assent and calls through the open door to Tom. He comes out, gets his orders, but makes a bargain with Dad to drive him and his friends to a ski run in the afternoon, as a reward. As the morning passes, we see Tom struggling through his task. We catch Dad, outside his office, arranging with a friend for bridge, that very evening. When he reaches home, at noon, Tom holds him to the bargain, and off they (and any others that you may want to put into the film) go for skiing.

Here you can mix scenes of sport with pictures of the family, but the all important thing is to show, clearly and emphatically, that the youngsters give Dad an active and bustling afternoon, in the open. When, finally, they get home, he is tired and drowsy, and bridge is out of the question. As Mother greets them in the drive Tom calls out gaily, "Gee, Mom, I hope it snows tonight, so we can talk Dad into taking us skiing tomorrow!" The film ends with Father waving protesting hands, as he goes wearily into the house.

*A short film of children*

Have you a daughter and a dog? There is the basis for a

film story. The day is sunny, and Mary and her friends are playing in the sand box in the back yard. Close at hand is a small table, with children's chairs and the usual litter of toys. The little girls decide to play "tea party"; they set about gathering the scattered toy plates and spoons. These are soiled from last week's production of mud pies.

"You can wash the dishes, Jane," says Mary, pointing to one of her playmates. Jane protests, but it does no good. She wins the job. The action could be filmed in this way.

*Medium shot.* The children playing about the sand pile.

*Semi closeup.* One of the girls, who looks up from her play and says:

Title. *"Let's have a tea party!"*

(The title can be made, at small cost, by a commercial title service.)

*Medium shot.* The girls like the idea. Mary, in the foreground, picks up a tin plate, caked with mud. She looks at it.

*Semi closeup.* Mary inspecting the soiled plate. She looks up and points past the camera, saying:

Title. *"You can wash the dishes, Jane!"*

*Semi closeup.* Reverse the viewpoint of the camera and point it toward Jane, who is facing Mary. Jane does not want to obey, but she reluctantly takes the plate that Mary hands to her.

(To reverse the viewpoint is often effective, in telling a story with a movie camera. Here we see Mary, from Jane's

point of view; then, Jane, from Mary's point of view. The result is much more interesting than if we had filmed both Jane and Mary in one medium shot.)

Mary and her companions busy themselves in the sand box, manufacturing mud pies for the "tea party," while Jane washes plates and cups at the tap, near the house. Mother, seated on the back porch, watches the children. She is peeling apples, preparatory to baking pies. We could film this part of our story in the following scenes.

*Medium shot.* The children near the sand box. Jane carries the dishes out of the scene, and Mary leads the others in the pie making action.

*Semi closeup.* Jane washing dishes at the tap.

*Medium shot.* Mary and others at work in the sand box.

*Medium shot.* Mother peeling apples and looking past the camera at the children.

*Medium shot.* Jane brings the clean dishes to the sand box, to be filled with fresh mud pies.

(Here, several things happen at the same time. Jane is washing dishes; Mary is making mud pies, with the other children; Mother is peeling apples. Note how the shots of action are interlaced, to give the impression that the different scenes occur at the same time. This is called "parallel action.")

We have the beginning of a little film story. Now we need to develop it, so we introduce the dog. He bounces into the

picture, while the children are working at the sand box. He sniffs at the mud pies and proves to be a general nuisance.

Meanwhile, Mother has finished her task with the apples, and a closeup of them, neatly sliced, shows that they are probably destined for pies. She carries them into the house.

The scene shifts back to the sand box, where the dog is causing more trouble. (The application of syrup to the mud pies will lure him to smell them and, perhaps, to lick them.)

The problem of the dog has become intolerable to the cooks, so Mary ties him securely, she believes. A closeup of the dog shows him, with head cocked to one side, looking speculatively at the camera.

In the next scene, Mary returns to the others at the table. They have set it neatly, with all the mud pies in place. One of the girls finds a vase among the toys and puts it in the center of the arrangement. There is a discussion—flowers are needed—and the whole group goes out of the scene.

We see the children in the garden, selecting flowers for the table. The scene shifts to a closeup of the dog, straining at his leash. The knot slips, and he bounds past the camera. The action is filmed in this series of scenes.

*Medium shot.* Children in the garden, picking flowers. One girl carries the vase, into which others place blossoms.

*Semi closeup.* The dog straining at the leash.

*Semi closeup.* From a different angle, to show the knot in the leash, as well as the dog. The knot slips, and the dog runs out of the scene.

(The dog's master, or mistress, stands beyond lens range and calls to him. Between these last two scenes, the knot is loosened, so that it will slip.)

*Medium shot.* The tea table. The dog bounds into the scene and jumps up to the table, to look at the mud pies.

*Semi closeup.* Two children in the garden hold the vase, now nearly filled with flowers.

(Note the parallel action in this part of the film. While the children are picking flowers, the dog escapes, which is expressed by showing alternate scenes of the two courses of action.)

Mary and the others return to the tea table, only to meet disaster, for the dog has knocked it over. There is much grief and excitement. The children scold the dog. They start to right the tea table. But they hear something——?

It is a parade, evidently in front of the house. They rush out of the scene, deserting the table and its confusion. All this could be pictured in these scenes.

*Medium shot.* The children coming toward the camera, carrying flowers.

*Semi closeup.* Mary stops suddenly; she puts her hands to her face and stares past the camera.

*Medium shot.* Reverse the position, the camera taking Mary's viewpoint, to show the table, which has been overturned. The dog still sniffs amid the debris.

(Between this shot and the last, you can tip the table, if the dog will not oblige. Some raw meat, placed among the wreckage, will entice him to nuzzle the mud pies. Note the camera treat-

ment, by which we show, first, Mary staring past the camera, and, second, what she sees. The latter shot is filmed from her viewpoint. This is an example of important movie technique.)

*Medium shot.* Reverse the viewpoint, to show Mary and her friends. They run toward the table.

(Film this scene from a position that is closer to the action than are the viewpoints of the other medium shots; center Mary in it.)

*Medium shot.* A side view of the tea table. The children run into the scene and begin to set things in order.

*Semi closeup.* Mary scolds the dog; the others are busy with the table, in the background.

*Medium shot.* The children at work. Mary begins to tie the dog again, when all hear something. They stop suddenly.

*Medium shot.* Of a parade, a fire engine, or any other street spectacle.

*Medium shot.* The children again. They all rush out of the scene, toward the street, the dog with them.

[Here is another useful device for telling a movie story. The children do not *see* the parade; they *hear* it. To tell the audience what they hear, we insert the shot that shows the parade. This scene can be filmed at any time, or you can take it from another reel and

"splice" it in at this point. (See Chapter XI.) The parade need not even be filmed in front of the house, because almost any parade scene, that does not show unsuitable background, can be used.]

While the children watch the parade, Mother comes out of the house, to the porch, carrying the pies that she has baked. She puts them on a table on the porch, to cool. Suddenly she sees the overturned tea table. (A closeup of Mother looking up; a semi long shot of the tea table; another shot of Mother, who smiles and shakes her head.) She goes to the table and sets things right.

Then she leaves the scene, but returns with clean dishes which she places on the table. She has also brought one of her pies, which she cuts, apportioning a piece to each plate. As a final touch, she puts the carefully garnered flowers in the center of the neatly arranged table.

When we break this action into separate scenes, we should splice in another shot of the parade and follow it with a scene of the children, in line along the fence, looking eagerly past the camera. (Actually they do not see the parade, but the audience will not know this, because of the association of ideas: (a) children watching and (b) the parade. This association will be so strong that the audience will take for granted the fact that the children are watching an actual street scene.)

Next we show Mother on the porch, discovering the wrecked table. We have a closeup, as she cuts the juicy pie.

The children, returning from the passing parade, discover the neatly arranged table. They are puzzled, but delighted. Mother, in hiding behind the house, catches the dog; she holds him by the leash, while she watches the effect of her thoughtfulness.

Here, you might insert attractive closeups of the children,

as they enjoy the pie. The next to last shot can show Mother watching, and the final scene can very well be a closeup of the dog licking his chops, which have been previously anointed with syrup.

This simple, but lively, film tale could be completed in an afternoon, for the whole action is staged out of doors and in the same general location. Only the footage of the parade is extraneous, but you may already have this or you can secure substitute action—firemen, for example—within a few days.

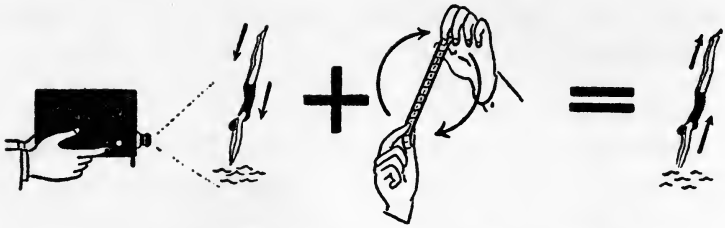
*Tricks that deceive*

Easy tricks—the deceits that cinematography makes possible—which can be accomplished with any movie camera, always add interest and variety to family film stories. Since they exhibit the unusual in the very bosom of the usual, their effect in these intimate films is especially hilarious.

First of these tricks is that in which the running camera is suddenly stopped, all characters "freeze," or hold their positions, and an object is removed from, or added to, the scene. If the object is removed, it must be one to which attention has been directed in a previous scene. When the camera is started again, from an identical viewpoint, the effect on the screen will be that of the object mysteriously vanishing or appearing.

Since exact "freezing" and the exact registration of all objects in the second scene, just as they were located in the first, are often difficult, especially if a large setting is employed, this device is best used from a close camera position.

Second of the simple camera tricks is "reverse motion." This is achieved by filming a scene of normal action, with the camera held upside down. When you receive the reel from the processing station, the inverted scene is cut out and its footage is turned end for end, after which it is spliced back into the reel. When the film is projected, every action in the scene which was filmed upside down will appear to have occurred backward.



Holding the camera upside down plus turning the scene end for end, after it is processed, equals reverse motion.

A diver springs back from the water to the diving board, a sled magically slides up hill or building blocks rise from the floor, to arrange themselves into a structure. All this wizardry is accomplished merely by holding the camera upside down and by turning the scene end for end, after it has been processed.

Suppose that we film Mary Anne reading in a swing. She is intent on her book, which the camera, by a closeup, reveals as a collection of fairy tales. Some friends enter the scene; they ask her what she is reading; she shows them the book. They laugh skeptically, but Mary Anne wins their attention by pointing out that she has just been reading about a magic wishing stone.

"Let's look for a wishing stone!" exclaims one, and, still laughing at their own foolishness, all the youngsters are soon intent on the new game. One after another, various stones are tried, but nothing happens. Suddenly, one girl holds a strangely shaped stone in her hand, as if she were making a wish. Presto! A box of candy appears on a chair in front of her.

Amazed and incredulous, she gingerly puts out a hand to touch it. It is real! In great excitement, all reach for a sweet from the box which the wisher has opened. The stone is forgotten for the moment. But it is soon remembered, as one child after another tries its powers. They wish for dolls, bi-

cycles, or whatever their hearts desire (and your properties permit).

Mary Anne's brother, who has come into the scene to "cadge" the candy, looks speculatively up at a fairly high object, such as a porch or the top of a wall. He picks up the stone and scornfully expresses a wish to be lifted. Now, by using the reverse motion trick, we can show him apparently flying to the wall top. We merely film him with the camera upside down, as he jumps from the high point down to the ground where he stood, when he made the wish.

For a climax, Mary Anne might wish that all her guests would go home, so that she would have no competitors for the candy. Even as she voices the wish, in an aside—for her politeness goes that far—the others disappear, carrying what they wished for away with them, excepting the candy. (It will be more effective if they do this one by one, rather than *en masse*.) Mary Anne looks about, in evident disbelief. Now, Mother enters suddenly and collars the remains of the candy. Mary Anne stares at the wishing stone, which she holds out in front of her. It vanishes, too. Mary Anne rubs her eyes, shakes her head ruefully, and the film ends.

*Direction*

In "around the yard movies," you must nearly always be the director, as well as the cameraman. The first rule of good direction, whether the actors are children or adults, requires that the director must have clearly in mind what his players are to do.

Here, the well sequenced film plan is an important aid. Since you have prepared a plan, you are thoroughly familiar with the course of your story. By checking against the plan, you may make sure, during the actual filming, that you are getting the scenes that you need and want, and that your choice of viewpoints is adequate, varied and effective. A film plan leaves you free to tackle the job of managing your actors.

Your most important counsel to the players, of course, will be the old warning, *do not look at the camera.* Besides stating this rule categorically, it is often helpful to explain to your cast, if they are not too young, the reasons for it. Since the temptation to stare at the camera stems directly from a "snapshot consciousness," point out that, in this case, you are not trying to take *their* pictures, but, rather, to film them as representatives of persons in a story.

Mother should think of herself, not as your wife, but rather, as somebody embodying the general characteristics of motherhood. For the moment, she should endeavor to portray an idea, instead of simply being herself. Don't say that you want to take *her* picture. Say, rather, that you wish her to serve as a *model* for the familiar actions of any mother. With this thought in mind, your players will be far less tempted to give way to inane and self conscious camera "jitters."

Second in importance is the matter of knowing exactly what you want your players to do in each new scene. Explain these actions to them clearly, in whatever manner you find to be most effective. One method is by the *general* approach, in which you simply outline the course of the story, leaving the interpretation of his part in it to each player. While this may work toward more natural action, it obviously can be used successfully only with a relatively able and adult cast.

Far more sure is the specific method of suggestion, in which you set forth, in exact detail, just the actions and the attitudes that you wish to have portrayed. John, you point out, is seated, looking over a handful of travel folders that describe a West Indian cruise. Mary enters from the left, comes up to him casually and begins to speak. As she does so, John bounds from his seat and tries, awkwardly, to conceal the folders. Mary, suddenly aware of his dismay, indicates a wish to see what he is hiding. John finally produces the leaflets. Now comes a closeup of these, in Mary's hands. This illustrates direction of the specific kind.

Whichever method you employ, be sure, in simple films of this kind, that the actions which you ask or expect from your players are natural and easy. Don't look for too much in the way of histrionics. If you must have something on the "heavy" side, plan especially to keep that particular scene short and direct, so that your actors will have little, if any, time for "acting."

Even in the simplest portrayals, be careful to provide every player with some simple bits of "business," some casual actions which will keep his hands busy and his mind free from self consciousness. Common examples of business are found in a man's lighting and smoking a cigarette, a girl's checking her "complexion" or adjusting her hair, and in an actor's tossing a small coin or twirling a key chain.

Once the actual shooting begins, don't take a position that is obviously tense and uncomfortable. Your discomfort may transmit itself to the actors. If you hold the camera in your hands, do this easily and casually. If it rests on a tripod, avoid crouching behind it, in your best newsreel technique, while you shoot a simple garden scene. Select your setting and determine your action, first; then, if possible, rehearse the action, while you observe it in the viewfinder. When you really film the scene, push the button from an easy stance beside the camera. If you do this, you are far less likely to distract your amateur actors.

This offhand camera handling has the further advantage of letting you use the "chatter" technique of keeping your players at ease, while you film them. Like the magician or the card trickster, you will base much of your success on ability to keep the attention of the actors fixed on things of which you want them to be aware. Push the button and begin your casual comments at once. Give your directions easily, urge the actors softly, and act the clown somewhat, if need be, to keep your players relaxed and responsive to your desires.

*Directing children*

If all your actors are children, the foregoing suggestions will serve fairly well, but there are still others which are important. In dealing with youngsters, be especially careful to keep each scene short and simple.

Young minds either cannot, or will not, concentrate, for long, on carrying out a continuous stream of directions. Don't ask too much of them in any one take, and be ready always to shift to a new camera position, if something goes wrong. The changing viewpoints will improve the film, in any case, and all slight errors can be trimmed out, in editing.

Many filmers have found it helpful to enact important bits of action for the benefit of young players. Children are very good mimics, and this love of mimicry gives you a natural beginning, from which you can elicit more individual responses. Challenge the youngsters to do better than you have done, and you will probably get convincing results.

Tell children, seriously and carefully, what the story is and indicate the importance of each part of it. Be sure that they know the reason for a scene in the film tale, for this information helps them to keep a feeling of continuity.

Both children and adults may move more quickly than is desirable. Tell them to pause, before making significant gestures, and show them, by example, how to move more deliberately, yet naturally.

Above everything else, don't urge children to be "cute." They probably will detest the suggestion and will freeze up at once. Make them see that your movie making is, for them, really a new and interesting game, and you will get the best that they have to give you.

*We must get close shots*

In all pictures of family and neighborhood life, it is very important to have close shots. The chief purpose of these films is to provide, in years to come, a record of bygone days, and a record that is more real and interesting than a rambling

series of "portrait scenes" in which nobody is natural. So, the camera must come close enough, time after time, to get characteristic expressions.

Also, your audience, in looking at one of these family pictures, will, very early in the projection, want to know which figure on the screen is Sally and which is Dorothy. The close shot will give the answer.

In directing a group of amateur actors in a simple back yard story, the fewer you have in a scene, the easier it is to manage them; so, we have another reason for the use of close shots.

Finally, we must never forget that the camera has only one method of giving us details which, in real life, we observe by handling objects, and that is through the closeup, the most informative of all camera positions, because it answers the very natural question, "what is he doing now?"

## CHAPTER VII

## WE NEED MORE MOVIE TOOLS

IN THE earlier chapters of this book, we have met the basic movie tools—camera, projector and screen. With these, anybody who will exercise care can make and show beautiful movie scenes. If he is willing to plan his pictures in advance and to present a theme or continuity that follows the sequence method, already discussed, he can, with the admixture of a little imagination, produce entertaining, and even stirring, movies.

But there are a number of accessory tools that will greatly improve his pictures and expand the possibilities that lie before him. Some of these, like the exposure meter, already referred to, help by simplifying necessary steps in filming, leaving more time for the real fun of movie making—planning what you want to film and how you are going to film it.

Other accessories add directly to the flexibility of the movie medium and extend the range of effects that you can get. All these are useful, but none can take the place of care or imagination on the part of the man behind the camera.

### *The tripod*

Foremost among the accessories that improve a filmer's results is the tripod, because, after correct exposure and focus, nothing contributes more to the attractiveness of a movie scene than a rock steady image in projection. Few of us, unaided, can hold a camera so firmly that views will not appear to be shaking on the screen. This extraneous move-

ment is bound to detract from the scene, however beautiful or interesting it may be.

Can you imagine yourself in an art gallery, trying to look at a painting that bounces and pitches in every direction? Your natural desire would be to grasp it and to hold it still. You would, putting it mildly, enjoy the picture more without this distraction. Is not your movie audience similarly entitled to look at scenes in which only those objects move that should move, and in which the earth, the sky and other normally stationary features remain fixed?

A tripod offers other advantages besides camera steadiness. You can place your camera on it and, while you are looking through the viewfinder, you can move the camera upward, downward or to one side, until you discover the most effective viewpoint. When this has been found, the camera may be left in the desired position, while you step forward to take an exposure meter reading or to direct your subject.

If you want to follow a moving object, the "pan" head of the tripod will let you swing the camera smoothly, while you keep the subject centered in the finder.

A tripod is exceedingly helpful when you film from a moving automobile, a train or some other vehicle. You might conclude that a scene made from a moving car would be steadier, if the camera were held in the hand, so that the body would "absorb the shocks." As a matter of fact, the body does not absorb shocks; it magnifies them. The vehicle, being heavier, does not bounce as high as you do; hence, the steadiest shots from a motor car are made with a tripod resting securely on its floor. If you doubt this, try the two methods and compare the results.

Although the use of a tripod greatly improves a scene filmed from a train window, it does not remove the objection to a shot made at right angles to the direction of travel, if any objects are in the foreground. Such a shot gives a result similar to that of a panorama of adjacent vertical features, in which objects that flash past you will dither on the screen.

Filming from a train or automobile, one may obtain best results by shooting either in the direction of travel, or away from it—through the car's windshield or from the rear observation platform of a train.

Even if the tripod is the steadiest camera support, its bulk and the time required to set it up are handicaps. There are substitute devices, fairly convenient in use, such as the "unipod," a single leg, at the top of which is a screw for engaging the camera. This device prevents vertical camera motion, but one must take care, to avoid lateral movement, in using it.

Variations of this type of camera support are the "breast pod," a neck strap from which a camera may be supported; the "chain pod," a chain, one end of which is fastened to the camera, while the other is left free, so that the operator can stand on it and, by lifting the camera until the chain is taut, prevent vertical movement.

When none of these accessories is available for camera support, objects that are near at hand can often be pressed into service. The camera can be placed on boulders, tables, window sills, car sides or fences. It may be rested against the side of a building or a tree trunk.

Lacking a tripod or a tripod substitute of any kind, the camera must be held as motionless as possible. Practice an easy, comfortable stance, with arms braced against your body. The rifleman's technique is a useful guide.

*Filters*

An accessory that will both improve a movie maker's results and expand the range of his artistic expression is the filter. This is a piece of colored glass or tinted gelatin, set in a suitable mount, that may be placed in front of the camera's lens. Gelatin filters may be placed behind the lens. Filters modify the effect of the light that reaches the lens and, through it, the sensitive emulsion.

Most black and white films are especially sensitive to blue light. This is something that would be of no particular con-

## Frames from Amateur Films

T. J. Courtney, ACL

Frank E. Gunnell, ACL

F. R. Crawley, ACL

Judith and F. R. Crawley, ACL

**Amateur filmers make prize winning movies of news events, pets, vacation days and back yard subjects. You need not go far, to find material for a good film.**

Philip Gendreau

You can darken the sky in a color shot, by using a polarizing screen. Thus, you may obtain a dark blue background for brilliant foreground colors.

Esther Henderson from Black Star

In black and white filming, use a filter to darken skies and to make the clouds stand out. The illustration, right, shows this effect. Below are frame enlargements of filtered black and white movie shots.

Ray L. Garner

Clement K. Chase, ACL

sequence to the average movie maker, were it not for the fact that the sky is blue. But it is blue; hence, the areas of sky that are included in a black and white scene are likely to be overexposed. Light coming from the sky is both strong and plentiful and it is of a color to which monochromatic film is especially sensitive. This light may give us a glaring, white sky on the screen, a "bald sky" in which clouds—with their wealth of beautiful forms—being themselves white, are entirely lost.

But this effect is easily corrected by using a yellow filter, which retards blue light or, putting it more exactly, allows less blue light to reach the lens. A yellow filter darkens the sky that we see on the screen and permits white clouds to stand out against it.

We sometimes speak of using filters "to bring out the clouds"; actually, the filter has no effect upon these, but only upon the sky behind them. If this sky is completely filled with clouds, as it is on an overcast day, using a filter will make no appreciable difference in the picture.

Yellow filters are available in a variety of densities; roughly speaking, the darker the yellow, the darker the shade of gray in which the blue sky will appear on the screen. A red filter—another type of these most serviceable movie making adjuncts—has an even more pronounced effect, because it will give us an almost black sky, in strong contrast to the white cloud forms—a beautiful effect, but of limited usefulness, since it is overdramatic.

A filter tends to lighten objects of its own color; therefore, a red filter will cause red lips to register as very pale gray; it has the effect of eradicating freckles from screen portraits and of lightening the tone of deeply tanned skin.

There are also green filters, which are chiefly useful in filming subjects, such as landscapes, that have a preponderance of green. They cause green shades to register in lighter tones of gray and they darken red shades slightly, when they are used in conjunction with panchromatic film.

With all their magical effect on black and white movie scenes, filters are both inexpensive and very easy to use. Spring clip filter mounts may be had to fit lenses of any diameter for 8mm. or 16mm. cameras. Optical manufacturers supply filters, mounted to fit their particular lenses, and camera makers also offer them, arranged for convenient use with their products.

Since filters prevent a certain amount of light, of a specific color, from reaching the lens, it follows that they diminish the total amount of light that affects the film. One must open the lens diaphragm wider, to compensate for this loss of light, in order to avoid underexposure.

*Filter factors*

The extent to which we must increase exposure over the normal amount, to compensate for the presence of the filter, is called the filter's "factor." This is expressed in numerals, with the addition of the letter "x," thus: 2x, 4x, etc. The letter "x" signifies "times," just as it does in a multiplication table.

A 2x filter necessitates opening the lens by one full stop, to compensate for the amount of light that is excluded by the tinted glass. A factor of 4x would require two stops of additional exposure, while an 8x factor would call for three stops. In calculating the number of stops indicated by a given factor, one must remember that, whenever the diaphragm is opened by one full stop, the amount of exposure that is given to the film will be doubled.

The factor of a given filter is not constant, and it differs with the type of film that is used. This is true, because black and white films vary in their sensitivity to colors and, therefore, in their sensitivity to the effect of the particular color of a filter.

So, we must find the factors of our filters, with reference to the film that we use. The filter's maker can almost invariably supply this information, but, if he does not do so, you can obtain it from the Amateur Cinema League.

Using filters can be greatly simplified, if, after getting your factors, for employment with different films, you will translate these into a statement of the additional diaphragm opening that is required for each film. You can write the resultant information on a card which can be carried in your camera case. Notations on the card might read:

With ———————— film.

In using my yellow filter, open the diaphragm one stop over normal exposure

In using my red filter, open the diaphragm three stops over normal exposure

Notations for use with other films may be placed on other cards, or all may be collected on one. However, it is essential that, before you depend upon any set of notes, you make certain that these apply to the film that will be used. If, for example, you shift from panchromatic to extra fast film, new notations may be required.

A yellow filter may be used with orthochromatic or panchromatic emulsions. A red filter may be used only with panchromatic emulsions or with one of the extra fast panchromatic films, for orthochromatic emulsions are not sensitive to red light, and red filters admit light of that color only. If you try to shoot a scene with orthochromatic film in the camera and a red filter on the lens, the net effect will be the same as the result that you would get, if the protecting cap were left on the lens—blackness on the screen and no picture at all! A green filter is useful only when you are filming with panchromatic and extra fast panchromatic emulsions.

No filter can be used profitably with "color blind" film, of the positive type. With this emulsion, the only effect of filters is to reduce the exposure, although a red filter would prevent any exposure at all, as is the case with orthochromatic film.

All these filters are intended to improve black and white

movie scenes, and none of them should be used with color films. The effect of such a filter on a scene in natural color is precisely the same as that which would be observed, by holding the filter to the eye. Everything in the view is tinted with the color of the filter itself.

A specialized aid, that has no particular effect on any one color in the scene, is the neutral density filter—a piece of glass, tinted gray—which serves to cut down the amount of light that is admitted to the lens. Its usefulness is limited to those rare occasions when the movie maker wants less exposure than that which is given by the smallest diaphragm opening of his lens. This circumstance can occur when the camera is loaded with one of the black and white, extra fast films and when the action takes place out of doors in brilliant sunlight.

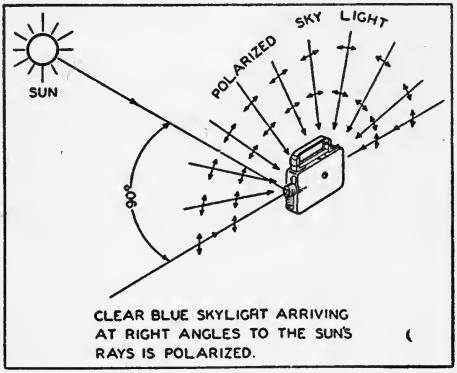
Using a great many filters is unnecessary for the average filmer, who will find his needs adequately covered by a relatively small assortment. Medium yellow, medium red and dark red give a sufficiently varied filter kit.

Some very good movie makers keep a yellow filter on the lens for every black and white shot made out of doors in good light. This practice does no harm, and it can add artistic values. If you try it, diaphragm settings must be made accordingly.

*The polarizing screen*

A good addition to a filter kit is the "polarizing screen," which, unlike colored filters, may be used with color film as well as with black and white film. It has two functions, one of which is very like that of the filter. It can diminish the amount of light coming from the blue sky and, if it is used with black and white film, it may cause the sky to register as a darker shade of gray. If it is used with color film, it may record the sky in a deep shade of blue, without affecting other colors in the scene.

The word "may" is used advisedly, because the exact results of the polarizing screen, unlike those of colored filters, depend upon the direction of the illumination, in relation to the direction in which the camera is pointed. The effect is greatest when the camera is aimed, so that the sun's rays strike at right angles to the axis of the lens. The effect is diminished as the camera is turned further toward the sun or further away from it. The diagram will help to make this clear. Obvi-




CLEAR BLUE SKYLIGHT ARRIVING AT RIGHT ANGLES TO THE SUN'S RAYS IS POLARIZED.

ously, the effect of the polarizing screen on the sky is smallest when we are filming with the sun directly behind our backs or directly in front of us. When the sun is exactly at one side, the effect is greatest.

The intensity of effect of the polarizing screen may be regulated by rotating it in its mount. In employing it, one stands facing in the same direction as that in which the camera is to be pointed. Then the screen is held to the eye and it is rotated slowly, as one inspects the scene through it. When the desired effect has been secured, the rotation is suspended and the screen is placed over the camera's lens. But a polarizing screen must be placed on the camera, so that its position in the mount is identical with that which obtained when the

rotation ceased. The effect on the projection screen is much the same as that which we see when we look through the polarizing screen itself.

The polarizing screen also has the property of eliminating undesired reflections from various types of surfaces, such as window glass, glossy painted objects and water, for example. If one films through a window and if reflections in the glass obscure the view, it may be possible to eliminate them by the polarizing screen. The screen is manipulated, for this purpose, just as we use it, to secure darker skies. It is held to the eye and, while one observes the scene through it, the polarizing screen is rotated slowly, until that point is reached at which undesired reflections are eliminated or are subdued as much as possible. Then the screen is placed over the camera lens.

Although the effect of the polarizing screen is conditioned by the direction of light, its range of utility is surprisingly large. By observing the scene through it, the user can always discover what result it will give.

*Filters for color film*

For a complete discussion of filters designed for use solely with color film, see Chapter XVII, *Movies In Color.*

*More elaborate cameras*

As one's filming range grows, he may want to buy a camera with more special features and facilities. He may admire the convenience of magazine film loading and may prefer a magazine camera for travel filming or for some special purpose in which interchangeability from one magazine of color film to another of black and white, at will and without loss of footage, is of particular value.

The rapid loading that is possible with a magazine camera and the film interchangeability that it permits make this equipment especially valuable in travel, sport and surgical filming.

If you have a camera that is permanently fitted with a

fixed focus *f*/3.5 lens, you may wish to employ one that offers lens interchangeability, so that you can use a fixed focus lens, a faster focusing lens or a telephoto lens, at will.

Two types of lens mounts permit this interchange. One of these is a screw mount, which is an opening in the camera case, threaded to take the lens, which is also threaded. The other is a bayonet mount, by means of which the lens is snapped into, and held in, position by studs and locking plates, instead of by threads. These two types of lenses are not immediately interchangeable, but they may be used together with the aid of special adapters.

"Turret mounts," that are available on some cameras, both 8mm. and 16mm., make possible a simple and immediate interchange of lenses. These are mounted in place on the turret, which is a revolving plate, that may be turned at will, to bring the desired lens into the taking position. Thus, in filming a football game, for example, one may shift rapidly from his regular lens to a telephoto.

Variable camera speeds, that are used to produce fast and slow motion, provide another feature that is available on more complex and flexible cameras, although a somewhat limited range of speed is offered with certain less expensive instruments.

The "single frame release" is an additional feature that opens new avenues for the ingenious filmer. It permits the exposure of one film frame at a time, and it is used in securing scenes with animated figures. In these scenes, jointed figures appear to move of their own volition, or drawings seem to come to life and move, as in theatrical motion picture cartoons. In giving animation to jointed figures, the object is moved slightly and a frame is exposed; then, a further movement is made and another frame is exposed, until the desired action is completed. When this footage is screened at normal projection speed, the object will appear to move without any apparent propelling force.

*Winding film backward*

A device by which film can be wound backward in the camera, after exposure, is another feature of some of the more elaborate types of 8mm. and 16mm. instruments. Generally, this takes the form of a crank, which is installed in such a way that, when it is turned, the entire film moving machinery operates in reverse. Certain cameras allow the entire roll of film to be rewound, while others permit backward winding only until the limit of full tension of the spring has been reached. Some cameras are also provided with a "reverse takeup" mechanism, so that, as the film is wound backward through the gate and the sprockets, the supply reel will run in reverse and return the film to its original place.

Other cameras do not have this automatic feature, and the film must be wound backward by hand, by means of a small winding knob on the side of the case. The "wind back" feature can sometimes be installed on cameras, not originally equipped with this convenient device.

The importance of this mechanism lies in the facility with which, by its aid, double exposures may be made. One may expose a scene, wind the film backward to a predetermined frame, and then reexpose it. In this way, for example, one might film a landscape, and on it record, later, the main title of a scenic movie; one might make a ghost appear in the scene or fill the screen with several smaller, independent scenes. This last effect, called "multiple exposure," requires the use of special masks, designed to obscure a part of the camera's aperture. One exposes a part of the film frame, having masked off the rest. The film is rewound, the area that was first exposed is now masked off, and another part of the frame is exposed.

This method of winding exposed film backward for a second exposure also aids in making "dissolves," which are to be discussed shortly.

In some 16mm. cameras we find a device, by means of which

one may make "fades." This is a "variable shutter," which may be gradually closed or opened, while the camera is running. This operation results in a scene which "fades out," if the shutter is gradually closed, or "fades in"—as the reverse of the fading out action is paradoxically termed—if the shutter is gradually opened.

With other cameras, a "fade out" or a "fade in" must be produced by devices that are placed in front of the lens for the purpose of gradually diminishing or increasing the amount of light that is admitted.

Since a "dissolve"is a combination of a fade out on one scene and a fade in on another, both of which occur on one length of film, this interesting effect is produced most readily by a camera that has some means of winding exposed film backward and also a variable shutter. One fades out on the first scene, using the variable shutter for this operation, then winds the film backward and fades in on the second scene. The combination produces a dissolve, which gives, on the screen, the effect of one picture gradually merging into, and being replaced by, another.

The "wipeoff," an effect in which one scene appears to displace another by shoving it aside, may be produced by a special device which can be fitted only to certain types of more elaborate cameras. This device is geared to the mechanism; it consists of a fan shaped blade, which moves before the lens, cutting off one scene. When the movement has been completed, the film is wound backward to the beginning of the footage on which the effect will appear, and the fan blade is placed in position, so that it will uncover the new scene.

The utility of fades, dissolves and wipeoffs and the various ways of achieving them without the aid of advanced cameras are discussed in Chapter XVI.

*Focusing devices*

One of the most important features of certain 8mm. and

16mm. cameras is a focusing mechanism, by means of which we may observe the image of the subject on a ground glass, while we focus the lens, and thus see exactly when that image is sharp. This device eliminates the need of distance meters or tape measures, in getting accurate focus. Some cameras that incorporate this feature do so in such a way that only a part of the entire field is seen in the device; this part is magnified, so that one may observe the image clearly. Other cameras are designed to show the entire frame area, so that one may see exactly the field that is covered by the lens, as well as determine when the picture is sharply focused.

A special device, which gives "full field, ground glass focusing," also may be obtained for magazine loading cameras. It is temporarily substituted for the magazine, and, when centering and focusing have been completed, it is removed and the film magazine is put in place, again, for shooting.

"Lens hoods," devices to shade the lens against direct rays of light, are often combined with holders for filters, since the design of these two objects encourages this combination. A lens hood, or shade, is a box like apparatus, especially useful when one is filming a back lighted subject. Sometimes it is attached to the lens with clamps; occasionally it is supported on a special bracket, fastened either to the camera or to the tripod. The rear of the box may be slotted, so that filters can be inserted.

*Diffusing devices*

Diffusion, by means of which hard lines in a picture may be softened, is achieved by placing a special medium before the lens, to break the light rays and to make the picture soft and hazy on the screen, to the degree that is desired. Special diffusion filters are made of various kinds of thin material, such as gauze, silk and mesh. Other diffusion filters are made of glass, on which a layer of lenticulated material has been deposited. Homemade diffusion devices can easily be improvised, by

using one or more thicknesses of stocking silk, mosquito netting or other thin stuffs. Light or white material tends to produce a foggy effect, while dark or black textiles merely diffuse the image.

Moderate diffusion is a pleasant effect, which should not be confused with the result of incorrect focus, a decidedly unpleasant phenomenon.

*Carrying cases*

Movie makers who have acquired a variety of equipment may find a special carrying case for their entire outfit to be a useful possession. While some camera manufacturers make very complete cases, even these may not accommodate your own particular kit.

This need may be filled by getting a special carrying case, built to your order by a firm specializing in such work. The movie maker who is handy with tools may want to make his own case. Inexpensive, small fiber or leather cases may be bought from luggage shops, and special partitions and blocks may be constructed within them, to suit the equipment that is carried. A lining of felt or corduroy, held in place by glue, adds neatness and durability.

## CHAPTER VIII

## THE CAMERA STEPS OUT

MOVIE making is a companionable hobby. Most filmers want pictures of other human beings, and they like to show them to their friends. So, in making movies and in projecting them, we cannot be solitary, because we need both subjects and audiences.

It is natural, then, for you and your camera to look for wider fields than those that you have found at home. You leave the back yard, not forever, because you will constantly return to it, but to satisfy that irresistible urge to record what goes on beyond the fence.

A movie camera is friendly, too. It readily unites with your other interests, and it can be a partner in your recreations, in your hobbies and in your fun. So, by all means, take it with you, when you go away for a day or a week end, because it will contribute a real share to the dividends of the trip and bring home a record that you can enjoy afterward.

### *Filming a picnic*

There are picnics, for instance. These are simple expeditions, but, like everything that you record well in movie making, they call at least for rough film plans. Sometimes, it may be advisable to work out in greater detail the exact scenes that you want to get. The introductory sequence, for example, should be set forth in quite specific outline, because, at the film's beginning, we must both give the reason for the footage

to follow and try, if we can contrive it, to catch the interest of the audience at the very outset.

It might be planned like this. In a closeup, we see a loaf of bread, as a hand and knife slice it neatly. The next scene shows Mother spreading butter and adding ham and cheese to complete a sandwich, which she packs in the picnic hamper. Now come more closeups and semi closeups of preparations—the cold chicken, the fruit and the cake, as deft hands pack them. Other members of the family are filmed, as they prepare for the event. Junior examines his snapshot camera; Sister rolls a swimming suit; Father assembles fishing rod and reel.

We must resist the temptation to get involved in filming the departure, the journey and the arrival at the picnic locale. We have provided a sufficient introduction, and now we need only a method of linking our opening sequences with scenes of the picnic itself. We want what, in movie parlance, is called a "transition."

Suppose that the last view of the preparations is a shot of the family assembled in the kitchen, ready for departure. Junior carries the hamper through the door; Mother is folding a blanket. The camera is moved forward, to get a closeup of Mother's hands. She raises her arms and, as she does so, the blanket obscures the entire view. The camera is then stopped. Another scene follows, in which the blanket alone is visible. Now it is shifted, in unfolding, to reveal the picnic surroundings in the background. The view that follows should be a medium shot of the journey's goal, with Mother in the foreground, shaking the blanket.

In another transition, an automobile might drive over the camera, as the family departs. This action blocks the view. In the next scene, the view is still blocked by the car, but, as it disappears, the wooded area of the picnic ground is revealed.

The sequence that is recorded at home could finish with a view of the back yard, as it is seen through an open car door,

which is closed, to end the shot. The next scene shows at first only the door, which opens, and we see the picnic table.

When we reach the scene of the day's activities, we shall need only a well planned general idea of the different things that we want to film. What the picnic party's members do is our first consideration. Here we can show the action that was forecast in earlier footage. Sister swims; Junior searches for "candid camera shots" or what he hopes will be a pictorial masterpiece; Father settles himself at the water's edge with fishing rod and pipe. But each of these incidents must be recorded in sequences.

Junior or Father have interests that lend themselves readily to the "running gag," an excruciatingly named—by Hollywood—but amusing device that can add humor, with comparative safety, to footage that might, otherwise, be without it. This movie fun maker can be achieved very simply. One of the party is shown repeatedly, during the course of the film, engaging in some simple action, such as a wide yawn, the concentrated munching of an apple, tying a shoe lace or dropping a book. When this has happened six or seven times at intervals, apparently with no relation to anything else in the footage, it becomes ridiculous and excites real hilarity from the audience. If, in the last repetition, the actor does not tie the offending lace, but tears off the shoe and hurls it past the camera, the "running gag" has accomplished its full purpose.

Our second concern deals with the real climax of the day's outing—the picnic meal. Pictures of our friends and family can be made here without the handicap of camera shyness, because everybody is too busy to bother about what he should do while he is filmed. Getting sequences around the picnic "spread" is an easy matter. You have only to caution all hands not to look at the camera and to pay no attention to you and it.

Shoot detailed closeups of setting the table or picnic cloth; show the eggs and olives, the sandwiches and salads, the ice

cream and the coffee. If steaks are to be grilled or sausages roasted, get the camera's nose right down to the action, so that moving patterns of firelight and flame will alternate with the sizzling goodness of the broiling bounty.

Show somebody sniffing the tantalizing odors of the cooking fire and others scarcely able to refrain from attacking the feast to which they are not yet bidden. Then all fall to, and strip the board of its heaped up provender. Remember to get the rapturous expressions of delight which hungry city dwellers exhibit, when they are led to food after a day in the open. Semi closeups are serviceable in this filming. Finally, as a finish of this sequence, draw back for a medium shot, as the entire group relaxes in various attitudes of repletion. If, in this last view, we gradually close the diaphragm of the lens, until the scene has nearly faded, we have a good ending for the whole picture.

*A day's jaunt*

Picturing a day's jaunt through the countryside is another popular filming objective for the camera that goes traveling. Here our continuity structure is not so clearly marked out in advance as it is with the less rambling picnic film. But there are, nevertheless, many themes, for sequences and subject matter, that we should keep in mind as a guide.

A popular type of pastoral film is that in which a walk through woods or a climb over hills is used merely as a slight connecting thread, linking a series of carefully filmed scenes of natural beauty. We all love the bronze and gold of autumn foliage, fields of summer flowers or the eerie quiet of winter's snow. Without some connecting link of human activity, to give livelier interest, these things are hard to present effectively in motion pictures. But we can show them, as if they were seen by a strolling pair, and we have a serviceable continuity.

This simple device requires thoughtful execution. It is not enough to film an occasional long shot or medium shot of the

strollers, as they wander through the "view." These scenes should be used sparingly.

What gives real interest are shots that are made at an upward angle, showing the wanderers as they come toward and pass the camera; a closeup of their feet, as they go along a path; a medium shot of them, resting on a hilltop, as one gestures to his companion, showing him something of interest in the distance; or a series of closeups, as they pause to inspect a flower or stone. These give the movement that is needed to keep the film from becoming static.

If you happen to prefer seeing nature from a car's window, instead of afoot, your more extensive expedition can be pictured in much the same way as this filming stroll is handled. You can add scenes of the car entering woods or turning a curve in the road and you can show members of your group leaving it or returning to it. For the rest, the treatment that has just been outlined will suffice.

*A more important adventure*

There is the full fledged picture of mountain climbing. Here are no casual strollers used as a secondary theme, in what is primarily a study of scenic beauty. In this more specific film, the participants and their problems are things of paramount importance, while settings remain as backgrounds. Thus, our film of such an expedition must be planned from the beginning, as a story of action and accomplishment. In a rapid introduction, we feature such items of equipment as hobnailed boots, spiked alpenstocks, coiled safety ropes and carefully balanced knapsacks.

If the party is accompanied by a pack train, we can show the packing also. Once on the trail, our theme is the progress of the group, as it winds through stream beds, climbs along well worn paths or slips and scrambles up rocky trails. Here again, a careful attention to significant closeups helps greatly to heighten the effect.

Shrewd choice of viewpoint may tell the audience of difficulties and dangers that do not exist at all for the climbers, as we avoid showing, for example, the protecting ledge below a struggling mountaineer or a scrambling horse.

The film progresses with the party itself, as it pauses for a rest here, or a brief lunch there, until, at length, the day closes in the quiet of an evening campfire. A natural ending can be filmed with a series of shots of the blaze, as it gradually dies and fades into blackness.

*Hunting and fishing*

A movie camera does fine work with hunting and fishing parties. In films of these groups, our basic continuity problems are much the same as those that we found in filming a picnic. First we need a brief introduction — overhauling well worn gear, poring over route maps, packing the car or trailer; and then—off, down the highway!

Here is always a good place to introduce and to identify the persons in the film. Next, if we want a full development of our theme, comes a swift transition from city to country, followed by the arrival at camp and the process of settling in.

Once on the ground, we are ready for the main body of the film's story, which, with either rod or rifle, is basically one of *conflict.* Many films of these subjects fail in their effectiveness, through neglect of this essential truth. For what trout ever came to creel without long minutes of exciting struggle? What bear has dropped at a rifle's crack, shot comfortably from the cabin's doorstep? Good fishing and good hunting are hard work, a long, heartbreaking and, at last, an exhilarating conflict between the hunter and the hunted. If they were not, few indeed would regard them as real sport.

A good hunting or fishing film must build up this feeling of struggle and conflict, if it is to give a real picture of these sports. To do this, the cameraman must keep in mind four elements, essential to such a record. These are the anticipation,

suggested by preparation of rods or rifles, and ending in the actual start of the chase; the conflict between hunter and hunted, depicted in a sequence of parallel action, showing the pursuit by the hunter and the flight of the hunted; the continuing frustration of all the sportsman's best efforts, as the game outwits him or he misses a difficult shot; the final victory of the hunter, which now has significance because of the difficulties he went through, to achieve it.

This progression of scenes is not easily obtained, particularly if you attempt to catch them all during the actual hunt. But staged views are just as effective, and they can be arranged easily, such as medium shots of a hunter coming stealthily toward, and past, the camera; closeups of his feet tracking through underbrush; a shot, as he listens tensely, raising his rifle hopefully, only to lower it slowly, in disappointment; detailed closeups, as he loads, cocks or fires his rifle.

All these can be interwoven cunningly with such footage of game as you can get before, during or after a hunt. This is real movie making, and not just an unexciting long shot of a fine buck or bear toppling to the ground in the far distance.

So much for the central activity of your expedition—the hunting or fishing. Other things, far easier to film, belong in such a record. One excellent amateur movie showed the joys of two fine weeks by a trout stream and, not once, used a foot of film to picture the actual fishing. But, in his movie, the cameraman gave real attention to sequences of such matters as washing and shaving, cooking and eating, smoking and "yarning" around the campfire. Replete with closeups, including tantalizing views of frying fish, these sequences caught the savor of the wilderness vacation, far better than could unsteady distant shots of running game or fighting fish, that were made with a telephoto lens. Keep this in mind, when next you take your camera to the tall timber.

In all these films of expeditions, if you have shown the locale at home during the preparations, do not repeat this, as a con-

clusion. Doing so adds nothing to a good finish on the scene of chief interest, and it may bring an anticlimax.

*Filming games*

Golf invites movies, because it involves our friends in natural action. To film a golf game, we might begin with a closeup of a golf club's name, that is found on a building or a flag. The next scene could show a medium shot, made at an upward angle, of a friend teeing off. After he completes his drive, we picture the fairway, where the ball bounces into view and comes to a stop. (It was tossed into the scene from outside the lens field.)

The other player in the twosome tees off, and we then see his ball fall on the green. We could, in this way, alternate views of the players, while we give the high lights of their game. Try a slow motion scene of one player putting, or a sequence of him, as he makes a particularly difficult drive over a water hazard; but, first, film the hazard itself, so that the audience will be aware of the obstacle confronting him.

Like a number of other outdoor games, tennis gives particularly fine opportunities to record our friends in action, if we can persuade them to stage an event for us. In a medium shot, taken from a side of the court, we can show Jane and Sally playing. Then we can get a medium shot of Jane, serving, by filming from Sally's side of the net. Next, we reverse the viewpoint and show Sally returning the service. (Jane served again, from behind the camera, so that we could make this shot.)

Such sequences cannot be filmed during the actual playing, but we can make them in advance of a real game, and combine them with shots of the match itself, that have been made from the sidelines. Thus, we can create a dramatic movie treatment, which would be impossible of accomplishment without these expedients.

"Faking" shots in this way is not only permissible, but it often presents a more realistic idea of the situation than the

audience would get, if you filmed the actual game. By such devices, one can give those who look at our record a sense of actual presence, when they see the plays on the screen.

In picturing any contest, from badminton to croquet, don't forget the spectators. Before a shot of an especially good, or particularly bad, play, insert a scene of somebody watching the game and, after showing the play, return to the spectator, whose facial expression will comment vividly upon the chief action. This kind of treatment is another device that gives the

**In filming sports of any kind, don't forget to picture the spectators.**

audience an illusion of participation. Furthermore, the human reaction to something good or bad is really what makes it seem to be good or bad. "Reaction shots," as these are called, are your means of introducing the human element into any game or contest.

When outdoor sports or games are filmed in black and white, do not fail to use a filter. A white golf or tennis ball is lost in a white sky, but it will stand out clearly, if the sky is darkened by a filter. Upward angle shots of fishers and hunters, or of spectators at a match, are the best expedients for showing their intent faces, but you will also want the attractive background of sky and clouds that a filter can provide.

*At the seashore*

At the seashore, a wealth of sunlight conspires with the brilliant reflecting surfaces of water and sand to give our subjects high light and shadow. Under such ideal conditions, filters of every density may be employed, with telling effect, in monochrome filming; the medium yellow type serves for the natural

correction of the strong blues of sky and sea; the red is needed for those sparingly used dramatic shots, in which towering thunderheads stand out like marble against an almost black background.

In such surroundings, there is much to stimulate pictorial imagination. Wind, wave and sun trace, everywhere, sculptured designs of rippled sand and moving patterns of restless water. Beach grasses provide foregrounds for scenes of the shore or of the dunes. Color is all around us, brilliant on the one hand and soft on the other; alternating these harmoniously in Kodachrome footage is a real test of our ability.

The simplest scheme for a film of this subject is based on the story of a day at the beach. The picture may be made up of an introduction, the arrival and the activities, including personalities and special high lights. Instead of beginning this record at home, let us start on the beach itself, with the semi closeup of a hand, lettering in the sand. Here is the film's main title and here also are introduction and arrival combined.

In this semi closeup, as the lettering is finished, two pairs of feet scamper across the legend and out of the scene. Swiftly, the camera tilts up to follow them, and we discover a boy and a girl, who should be filmed in a medium shot. Close at hand, preferably seated, are the others in their group.

Then the film might present sequences of leapfrog, medicine ball, archery or swimming, depending upon the kind of beach that we picture. Scenes need not be planned exactly, in advance of shooting, but the constant interplay of medium shots and closeups should always be kept in mind. Later, in contrast to these more active incidents, we could achieve a quiet study of natural beauty.

Select, from the group, a lovely girl and a well tanned boy; ask them to walk through scenes for you, pausing now and then to marvel at the strange handiwork of wind and wave and the oddments left, stranded by the sea, at the water's edge. Show the couple walking on the beach and follow this shot with a sequence of what they see. A challenge to your faculty

of finding interesting things, such a sequence will long be the high light of your seaside film story.

*Water sports*

But there are other water sports. An entire short film might center around a swimming pool, to combine the action of diving and swimming with attractive shots of sun bathers, shimmering water and brightly colored *cabañas*. Where diving is done from a tower and from its attendant lower boards, an inventive cameraman may use an entire day, in getting just the right positions for a smooth sequence. Low positions, with the camera looking upward from the pool's rim; high positions, achieved from the tower; side positions, in which the camera follows the glistening arc of a swan dive—each of these plays a part in the sequence.

Several dives may be filmed, and selected shots may be combined, to simulate one complete action. Thus, you may get scenes from various angles, picturing what purports to be one continuous movement.

Slow motion adds to the beauty of breath taking turns from the high board. Heavy filters outline a gleaming figure against a darkened sky. There is much at a swimming pool, to attract the ambitious filmer.

Boating and sailing provide potentially fine film subjects. Do not overlook the advantage of medium shots and closeups, that show significant objects and actors or actions. Views of clouds and canvas are appealing, but so are closeups of the compass card and of a helmsman's head or hands and semi closeups of the wave breaking from the cutwater and of the swirling wake. Such intimate detail, pictured from interesting angles, will win an outburst of applause from your audience.

Back lighting is particularly effective in scenes of water and of most sports that have to do with water. You can use back lighted shots as ornaments for important sequences. For example, try a slow motion scene of a diver, silhouetted against the sunlight; catch a back lighted view of the sails of a sloop

or yacht. You will find that, when sunlight comes from the rear, sails will have a brilliant and luminous quality, that is more striking, if the sky is darkened by a heavy filter.

When water is back lighted, the tops of the waves "catch" the light in sparkling patterns. A traditionally beautiful scene is a shot of the path of sunlight coming toward the camera over a body of water. A heavy filter, used without full compensation for its factor, makes such a view appear as a moonlit scene.

Remember that back lighting is hazardous and that the sun must not shine directly into the lens, if you would avoid lens flare. A lens hood or great care in shading the lens is necessary for all these "effect scenes."

*Protect your camera*

When we film near water, it is easy for accidents to damage delicate cinematographic equipment. Unless we take care, sand may find its way into the camera's mechanism. Particular precaution must be taken, in camera loading, to offset the effect of blazing sunlight, as well as to protect against sand. Hands, adhesive from salt water or tanning oil, hold sand grains firmly. Friends running past, although yards away, may cast up a spray of sand that will cause damage. Even the protecting camera case may shelter this enemy.

The sun is a constant threat, and not only in the act of loading the camera with film. Serious harm may come to lenses and filters, if a camera is left lying in strong sunlight for a length of time. Even the camera's lubricants become thin under the punishing heat, with the danger of dry bearings and of oil on the film. Condensing salt sea air is another menace. It should be wiped carefully and frequently from lenses, filters and camera, whenever its presence is detected.

*Winter movies*

When the sun shines and skies are clear, winter serves filming as well as summer, and most winter sports are so excel-

lently adapted to movie making that they seem to have been devised especially for it.

You can give family movies a new "twist," by including winter scenes. Perhaps your boys are building a snow man, which can provide the topic for a whole film. Or a snow battle may be recorded. For this, take a medium shot of snowballs flying fast, from the defenses of the snow fort; reverse the viewpoint, to show the barrage aimed at the defenders. Reverse it again, to show one of the defenders, struck full in the face by a snowball. (This shot would, of course, be staged.)

This victim singles out a snow missile and hurls it past the camera. The next scene shows an attacker, trying to dodge the projectile, and this should be followed by one, taken from the defender's point of view, that shows a ball flying straight at the lens and, apparently, striking it. The final scene of the sequence reveals a boy, whose face is seen, in laughter, through the snow that was left on it from a bull's eye shot.

The scene of a snowball striking the lens is, like most tricks, very simple. A sheet of glass is held just in front of the camera, and the snowball—a soft one—reaches this, and not the lens itself.

A sequence of youngsters on skis or skates will enliven a "year round" family film, in which the calendar is followed, as a major continuity motive. Adult skiing is worth a whole picture.

Begin the ski movie with a sequence of semi closeups and closeups of preparations; skis are waxed, fitted to feet and buckled in place.

If the party goes to the ski run by special train, you could precede this sequence of preparation by shots of the group entering the train and by views, taken on the way, of impatient individuals, making ready for skiing. Fast film permits you to get interior train shots easily, especially if a blanket of snow reflects sunlight into the cars.

When you reach the run, show skiers climbing to the top or riding ski tows to reach it. From a ski tow, you may be able

to make an excellent traveling camera shot, but be sure to point the camera ahead or behind, rather than to one side.

For the down hill sequence, station yourself at a turn, to film the skiers rushing past you. Get a view from another position and, if possible, a long shot of a ski party. Then catch scenes of various turns and jumps, to the extent that your time and film, and the skill of your subjects, will permit.

To finish the reel, ask a skier to make a turn or a stop, in front of the camera; this will cause a shower of white snow, which will be shown very attractively on the screen. Take a back lighted view of this action, and you will have an episode that is always satisfying to your audience.

Winter sports, like water sports, call for the use of slow motion; sequences may also be ornamented successfully by side lighted and back lighted shots. Flat lighting on snow always produces a dull picture; side lighting is needed to bring out its texture. Remember, too, that a white landscape on the screen will be indistinguishable from a white sky; so, a filter must be used with black and white film, if the sky is blue. In fact, it is a good rule never to make a black and white record of winter views or sports on a clear day, unless a filter is employed.

Clear days are best for winter scenes—in black and white or in color—but, on a gray day, color film will give an attractive result, while black and white emulsions will not. The soft tones of such a day may be very beautiful in a color scene, although they will be flat, in a black and white sequence.

*Filming our town*

The things we have been considering are, in a way, special events. Most of us want, now and then, to film the ordinary things of our experience, and, perhaps, our own town. So, why not answer, on film, the question, where do you live? First, show your geographical location in the surrounding countryside; then go on to details of the town itself, and finally, to

achieve the climactic sequences of the picture, record your own neighborhood and home.

You could plan a film of your town and could extend the actual shooting over the period of a year or more, keeping your eyes open, during that time, for the best possible shots—parades, anniversaries, elections or the construction of a new post office. You can get pictures of the town's prominent citizens at work and at play.

The advantage of making such a film at leisure lies in the fact that, besides collecting the best possible scenes, you can augment footage, already recorded, with further views that explain the action at greater length. Thus, the arrival of a local boy from the city could be supplemented, at some later time, by scenes of a locomotive's wheels grinding to a stop and of passengers descending from the train.

Really interesting movies, of course, deal with people—and people who do something. You might contrast two types of work or the way of life in one part of the town with that in another. You might go about your streets shooting sequences of people, busy at different occupations, which would follow the title, *Men at work.*

When you make "candid" shots—footage of those who are unaware of the camera—a telephoto lens is a useful accessory. With it, you can film from an unobtrusive doorway, across the street, and get, for example, semi closeups of old women haggling over the price of fish, of a vigorous discussion on a street corner or of the foreman of a road gang shouting orders to his men. The unposed shot has a disadvantage, however; the movements of your subject, being unpredictable, are not always easy to keep in the viewfinder's field.

When you have posed a group of persons and come to rehearse the action, give all of them something to do. Beware of long pauses, while you determine exposure or search for a camera viewpoint. If these occur, you will lose the enthusiasm of cooperation from your subjects. Arrange the scene, if only in your mind's eye, beforehand; calculate exposure on the run.

You must keep your subjects busy, which will keep you busy, too.

It is possible to work out a sequence on the spur of the moment, by considering the scene as a problem in question answering. Aunt Hattie is watering flowers on the lawn. The three questions—*where, what, how*—answered visually, will give you a sequence. Thus, *where* will show the house and the lawn, with Aunt Hattie, a small figure in the foreground; *what* will show Aunt Hattie, in a medium shot, watering flowers; and *how* will reveal her hand and the flowers, in a semi closeup, as she goes about her business.

It is as simple as that. The camera may have "stepped out" in this chapter, but it has not stepped far, and many of the best subjects lie under our noses, in the everyday things of our lives.

## CHAPTER IX

## THE CAMERA SEES THE WORLD

THERE are three convenient basic schemes for travel and vacation movies, but, from each of these, we can evolve a great many highly effective continuity treatments. The three call for brief statement.

You may film a holiday, by showing how you get to its location. Thus, if you go by automobile, you can use your car, to link one place with another; a steamer, a train or an airplane can serve the same purpose. Or you can omit the vehicle entirely and use maps, on which a finger, a crayon or an animated moving line points out the route. You may join both schemes in one film and show how you traveled, and where.

You can present the place that was visited, without telling how it was reached, and save film by so doing. You may record the beauty and interest of the Grand Canyon or of Yellowstone Park; you may study the ways of birds, off the California coast, or show how people live in Hollywood or in Guatemala, without any footage of your journey. If you have an imperative urge to add something of your route adventures to this type of picture, you can satisfy it by filming a brief opening sequence, in quick tempo.

Finally, your personal Odyssey can serve as a central theme, if you have a helpful companion who can record you. A honeymoon is often filmed from this general viewpoint. There is golf, swimming, sight seeing, riding or luxurious lazing in the sun. What the two of you do is the important concern, and the

journey and the novel sights at its end are but incidentals.

Of course, these film plans need not be mutually exclusive, and many vacation records will combine several, or all, of them.

So much for generalities. Now, let us break these down into serviceable detail.

*Films that show how we travel*

A popular introduction to films, that use the method of travel as continuity, is a series of short scenes that show folders of railways, steamship lines and vacation resorts, in a variety of interesting patterns. These folders are shuffled until, at last, hands select one, and the camera moves backward, to present the central personage of the film—you, perhaps—relaxed in an easy chair, with pipe and pencil, all set to plan.

Maps and pencil come into play, in the consideration of various routes; at last, one is chosen, and the maps are gathered up. Now we see luggage, packed and ready to be taken out.

If you are going by ship, you can show the bags in closeup, revealing a steamer tag, which connects the departure with the travel folders. The departure itself should be only a further development of the introduction. This must not spin out into tedious footage, because it should launch the picture, and not sink it. We need but a few brief scenes—the crowded gangplank, the warning whistle, the waving crowd, the tugs, the wharf slipping back, the screws turning in midstream and, last, a shot of the wake boiling astern, as the scene slowly fades out. The journey has begun.

*Traveling by motor*

Likewise, in filming a motor trip, the introduction can quickly record somebody stowing the bags and checking the mileage dial, the goodbyes, a momentary failure of the motor to start, dismay on the faces of the passengers, then relief, as it roars

into life. Finish this sequence with a staged shot, as the car goes down the street and turns a corner.

Once it is neatly begun, the continuity of your motor journey should not be difficult. You might lead off with a title, *It may be a long way to Tipperary, but how far is it to California?*, and follow with scenes of the car in different surroundings, as you go on your way, and with shots of mileage posts and closeups of the flickering speedometer or of a spinning car wheel. (You can get this one while the car is motionless, by jacking up the rear axle.) Now, the driver changes place with somebody else, for a needed rest.

Emphasizing the continual progress of the trip will convince the audience that you are actually going somewhere, and that you are not presenting shots of incidental scenery, with no definite objective. This illusion of progress can be heightened, in many stationary shots, by using the car as a part of the foreground; the vehicle can also be shown in front of road signs, hotels and wayside inns.

A motor journey's footage can be amplified by staging shots, after the vacation has ended, to serve as additional continuity links. Suppose that we needed (or wanted) a scene of "the mister" at the wheel. Very well, then; let him sit at the wheel of the stationary car, while you, through the open door and from a low position, that will exclude all but his figure, the wheel, the window and the sky, shoot him, as he honks an imaginary vehicle out of the way, extends his arm and turns the wheel, as if to pass. After that, you have only to convince the neighbors that the master of the house is still in his right mind.

In the same way, you can film missing connectives for your continuity, by taking the car to some seldom used byway, near home, where you may stage a little sequence of blowout and repair, during the course of which Aunt Matilda collects such an enormous spray of dogwood from the neighboring forest that nobody can manage to stow it and her in the car.

In the privacy of this solitude, you can also get one shot

which no film of this type should lack. Set the camera on the road, at a slight, upward angle, depress the button in its fixed position and leave it. Just afterward, the car is driven toward and over the instrument. The driver must have good eyesight and steady nerves and the camera must be firmly placed. The result on the screen is one that we all know. Be sure to wipe any dust or oil off the lens, later.

*Filming trains*

Trains are excellent movie subjects. A whole film can center around a train journey. But, since ours is a vacation picture, let the train sequences be only an important part of a more inclusive effort. Our departure is handled much as we have done with motor car and steamer.

We shall probably go down, when we get home again, to our local railway station, to film the engineer of Number Five climbing into his cab, the conductor signaling, the porter withdrawing and retrieving after him the little portable steps of his trade, and finally the locomotive's wheels, as they slowly revolve and move majestically away. You will have a clever addition to this footage of the porter if you can, on the journey itself, show him, from within the car's vestibule, dropping the floor trap and closing the door, after his steps have been taken in. Spliced after the footage that you will get later at home, this completing shot will give your movie a nicety that other filmers will appreciate and applaud, because it shows intelligent planning in advance.

The illumination in a railway coach is ample for filming with extra fast emulsions, if the day is reasonably bright. Try shooting the landscape through the window, with the silhouette of somebody lighting a cigarette in the foreground. At some way station, film this same passenger from the outside, through the glass.

When the train is in motion, you must (and there is no exception) shoot from a support. This may be a tripod, the jamb of a door or the top of a coach seat, but it must be

something solidly connected with the body of the train itself.

A very simple, short sequence, easy to secure in a film of this kind, might be planned like this:

*Semi closeup.* Silhouette, taken inside, of a passenger gazing from the window.

*Long shot.* The train, filmed by holding the camera close to the window glass, but pointed ahead, to show the engine and leading cars going round a curve.

*Long shot.* The outskirts of a small town, filmed by holding the camera close to the window glass, pointed forward.

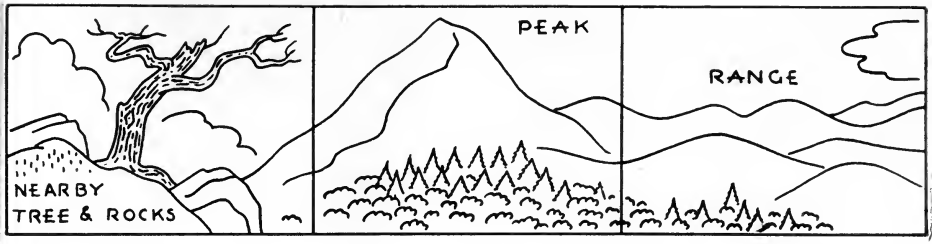
*Semi long shot.* Of a part of the station platform, after the train has stopped. This is filmed from the car window.

*Medium shot.* Of the station sign, which shows distances to both terminals of the line. (A telephoto lens may be helpful here.)

*Semi closeup.* The conductor near a car step. (Go outside for this.)

*Long shot.* The receding track, from the rear observation platform.

Make a real effort to get scenes of a train—presumably yours, as far as the audience is concerned. From a convenient location, record the last two or three cars, as they pass you. Then, scramble rapidly to the center of the track, after the observation car has gone by, and film the train disappearing, in diminishing perspective, into the distance. The audience




Instead of making a panorama of a distant view, take separate scenes. Note how readily the landscape may be divided into steady, separate shots.

Lewis B. Sebring, jr., ACL

Francis M. Hirst, ACL

Ralph E. Gray, ACL

Xavier Frias, ACL

George Tasso, ACL

Wherever you spend your vacation, you can film action, human interest and scenic beauty, as did these amateur movie makers.

Laurence S. Critchell, jr., ACL

William Goeben, ACL

Charles R. Dobbins, ACL

William Goeben, ACL

John C. Jay, ACL

FRAMES FROM AMATEUR COLOR MOVIES MADE IN SUMMER AND WINTER

will, if you are agile enough, have the curious sensation of the camera's having been transfixed by the train itself. This shot is a good finish for an entire section of your picture, as it always gives a definite effect of finality.

These train sequences are the thread of continuity for a travel movie of the first basic type, but they should not usurp all the footage that might be devoted to places and incidents, as the journey is broken by shorter or longer pauses. But, since we are dealing with a vacation record in which how we progress is more important than where we are going, the train is never to be forgotten.

A useful and simple trick should not be overlooked in train filming. In it, we record the track, as it is seen from the rear observation platform, receding from the camera, but we film it with the camera held upside down. This scene, when it has been spliced into the reel later, but reversed, end for end, will give you the familiar reverse motion, and you will have created the illusion of seeing the countryside from the front of the locomotive.

*Filming in the air*

Air filming differs from train filming, only because the space is more limited and because you cannot get outside, on a cloud, to show the airplane going past. There is often less motion, to prevent shooting from the hand, but the good rule for all movie making from vehicles remains valid here, too, and you should rest the camera on something connected with the airplane itself. Illumination in the cabin is ample, during the daytime, to achieve good exposures with extra fast film.

Record the stewardess, as she prepares dinner in her cubbyhole kitchen. Film a passenger eating; let him poise a fork in mid air, as he catches sight of something outside the window; later, splice in a number of views from aloft, to be projected before we return to his midday meal. Don't forget the little electric sign that flashes on—*Please adjust your safety belts*—to be shown in sequences of taking off and of landing.

Movie makers will find it better, in modern transport airplanes, to sit in rear seats, where the view beneath is least obstructed by the low wing. Remember—and here is an important point for all travel filming—that it is advisable to include a part of the airplane's structure in the foreground. This inclusion establishes in the minds of your audience the location from which the picture was taken. Without it, for all they can see, you were like Mohammed's coffin, in the legend —suspended between the upper and nether worlds.

When you are filming from an airplane, check your exposures with a meter, because certain safety glasses, used for airplane windows, reduce light. Employ a yellow filter with black and white emulsions. It will reduce atmospheric haze and will also add cloud forms to your sky views. A haze filter for Kodachrome is a matter of personal preference, since some movie makers like the blue tones that it filters out. To reduce the airplane's speed to coherent visibility, in scenes of landing and of taking off, film these, if possible, at thirty two frames a second.

You can, of course, return to the airport later, as you did to the railway station, to film these takeoffs and landings and all the details of "checking out a plane," which you probably missed in the actual departure.

*Ocean voyages*

An ocean voyage offers the most extensive opportunity for a vacation film that has, as its principal theme, the method of travel. The simplest continuity for shipboard movies is chronological.

After the sequences of departure—these have been described earlier—have ended with a fade out, you could use a title, *Southward Ho! Fair and warmer,* after which you might fade in on a shot of the ship's bell. It strikes four times—six o'clock. Sunrise is filmed, either in the background or as a separate scene, and you go on at once to shots of sailors washing the decks, a sequence in which you should be able to get excellent

closeups. The light will be less good, of course, so watch your exposure.

Go, then, to breakfast in the dining room. Film that exceedingly nautical detail, the round beam of sunlight from a port hole, as it swings leisurely, back and forth, across the table, with the movement of the ship, throwing brilliant high lights on glass and silver. Show the sea and the morning sky through this port hole, to achieve a transition to the upper decks and the morning games. Catch the determined health "hound," as he tramps vigorously for his mileage, bringing in closeups of his walking feet, the "do or die" look on his face and the people in deck chairs, who watch him with varying expressions of amusement.

The ever present deck game of shuffleboard can be given a more extended sequence.

| | |
|---|---|
| *Medium shot.* | A player comes forward with his shovel stick. |
| *Semi closeup.* | Player, with an expression of "I can't miss," looks confidently past the camera. |
| *Semi long shot.* | Player, in foreground. Scorer is seen in the other court, in background. |
| *Closeup.* | Expression of derision on scorer's face. |
| *Semi long shot.* | Player, in foreground, shoots. |
| *Closeup.* | Scorer's head, as his eyes follow the chuck. |
| *Semi closeup.* | The chuck crashes among the others. |
| *Closeup.* | It careens into the scorer's ankle. (It is, of course, directed from beyond camera range.) |
| *Medium shot.* | The scorer jumps with pain. |

Serving the mid morning bouillon can be pictured entirely in medium closeups and closeups, including one that shows the miniature sea of dregs in a discarded cup, tilting with the motion of the ship. Immediately after this might come a long shot of the restless ocean, by way of contrasting comment. Here is a good place for the introduction of a series of views of sea patterns, to show the Seltzer like wake of the screws, the discharge of white condenser water into the sea, the tip of the mast, quartering the sky, the swaying rigging, the wind rippled pool of water on a hatch top, and tropical jellyfish, churned to fragments in the bow wave—all of them, familiar, but seldom pictured, sights of an ocean voyage.

In rough weather, get several long shots, with the ship as foreground and the sea as the main feature, but keep the horizon level, while the vessel tosses and rolls. This feat is accomplished by centering the scene in the viewfinder, in the usual way, and by concentrating your attention on the background, which you keep horizontal by balancing your body against the ship's roll, so that the true, and giddy, motion of the ship, in the foreground, will be revealed.

*Films that show where we go*

A different plan for the continuity of vacation movies is used if you want to film only the place to which you go. This might cover a visit to Niagara Falls. The first step, in planning a movie of this type, is to divide it, on paper, into the various broad groups of things that you want to include. Such a division might read:

a. aspects of the falls themselves.
b. the river banks and scenes near the falls.
c. a journey on the familiar *Maid of the Mist.*
d. the river above the falls and the Whirlpool Rapids below.

Knowing what we want to record, we can plan our continuity. Often, a single title wording may come to mind that will suggest a continuity theme for the whole reel. Thus,

*Everything at Niagara foretells the great falls* gives an approach to a film of this natural wonder, in which the falls come as a climax, toward which all other footage leads. In this scheme, items *b*, *c* and *d* would precede *a*.

This picture could begin with a scene of mist, creeping through the leaves of a tree at the river's edge, and go on with a series of short similar scenes, taken along the bank. Then would come shots of the power plants and of several of the street signs, in the neighboring city, that refer to the falls.

Next, we could show visitors aboard the *Maid of the Mist,* with closeups of their faces, gazing upward; we could catch the bow wave and, again, the creeping mist. Somebody throws a cigarette into the water; somebody else, above the falls, throws another one, which drifts away, whirling down river. Now comes a sequence, in mounting tempo, of the rapids, as they grow wilder and more turbulent, until, finally, they rush over the edge of the falls. This sequence introduces the main portion of the film, in which we follow the general plan.

*Filming waterfalls*

Slow motion adds weight and immensity to a body of falling water. Filters are also invaluable, because they darken the sky, behind the mass of water, and cause it to stand out with startling distinctness. A fine shot of a waterfall will show it from below, with the camera looking up, so that the lip of the falls seems to overhang. The sky behind, filled with drifting clouds, will give a counter movement to the descending water.

Side lighting and back lighting are particularly striking in scenes of masses of water in violent motion. The geysers at Yellowstone National Park are admirable subjects for this type of illumination. Of course, filters are essential; without them, the flying water will fail to stand out from the sky.

If you have cautiously refrained from tilting your camera, you will find, in scenes of waterfalls, one of the few justifications for this procedure. You have the choice of following the falls from the bottom to the top, or of reversing the motion.

But do not add one action to the other, because you will destroy the effect that the first tilt has built up. There is little choice, although tilting downward is, perhaps, more logical. Be sure, in either case, to go to the very top or to the absolute bottom, so that the fully completed motion will give the audience a feeling of definite ending in the scene.

*Continuity for travel films*

Continuity themes for travel films are often developed around a single idea. Thus, with the West Indies, one could choose, as a continuity motive, the theme of colonial life and its interisland contrasts. A title, *In Trinidad, the long arm of British law turns black,* might preface footage of a colored, West Indian "bobby" on Frederick Street. Likewise, *Clerical costumes agree with faces in French Haiti and Dutch Curaçao* could be followed by scenes of the fathers going about their manifold colonial tasks.

A very easy and effective method of recording subjects, without their knowledge, is to film them from a parked motor car, because few passers by will notice you, if you are sitting in the shade. Another expedient is to conceal the camera inside one of the large straw hats that are so common and so inexpensive in many regions.

But, filmed openly or "on the sly," people are the important items. How they live, what they do, where they work—these are the things that you must get, if your movie is to have life and if it is to repay your audience for sitting through it.

A "please" and a "thanks," obvious as they may seem, are still the best way of winning cooperation. Naturally, the poorer inhabitants like to receive some small tip, as well, but it should be given with grace and courtesy, as a secret, not as as a public, gesture. When somebody is unwilling to pose, it may be necessary only to jingle a few coins in your hand discreetly. If he still refuses, drop the matter. Personal pride is everybody's privilege.

*Atmosphere*

Atmosphere in a travel film is achieved by two main devices —one, the choice of subject matter and the other, the direction of light. The first consideration is not so unlimited as one might think. If you try to choose scenes that include only local color, you will find your field of selection greatly restricted—and your results greatly improved. Avoid jutting corners of modern buildings, when the foreground is a native market; guard against long shots with unwanted items.

In considering the direction of light, you will discover, by keeping your eyes open, that certain illuminations enhance a mood, while others spoil it. Early morning light may add dimension to coin divers in a harbor and utterly ruin a street scene in a town. A flat, midday lighting will add contours and relief to the latter, but the submerged divers will have a pasty and one dimensional appearance.

People—to drive home this point—are the really important subjects. If you go ashore in a tender, why not film the boatman, who will pose for you, his face to the wind, his hand on the tiller? And why not get a closeup of that hand, gnarled and worn, as it turns the wooden stick? Then shoot the faces of your fellow passengers, as they gaze ahead expectantly. Move forward and show the man with the boat hook, as he waits to catch the craft at the dock; add a closeup of the bow wave diminishing, as the motor is cut off. Finish this sequence with a closeup of passengers' feet, as they mount the steps to the new world above.

You can go on, then, to some interesting views of the port town, but, when you have established the locale in this way, search for semi closeups, that show people buying curios in the shops, chartering carriages for a ride into the "back country," exploring the remoter byways—all subjects of ample opportunity for significant detail, such as cobblestones, signs in shop windows or coconuts for sale.

Such footage is often unpredictable, but you will find it more easily, if you look for it. You know, for example, that

two sequences of Bermuda, that show Hamilton and St. George, must be connected by transition scenes, to identify the method of transportation. So, you make a point of filming the members of your party as they embark in a carriage, adding a closeup of their feet mounting the step, to be followed by a scene of the driver's hand taking the whip from its socket, after which a long shot shows the carriage going away. By filming the vehicle, as it enters St. George, with, perhaps, a brief preceding scene of the countryside en route, the transition is achieved, and there will be no worries, later, on the editing table.

Are you driving to Florida in midwinter? Why not use the idea of contrasted weather, as a basic theme for a film? Cold to warm; bare elms to verdant palms; ice skating to swimming; blanketed horses to floating rubber steeds; steam radiators to electric fans; furs to Palm Beach suits—all contribute to an amusing movie. But you must plan this procedure before you leave home, so that you can choose scenes on the way, to prove your point.

*Filming what you do*

Perhaps your film is to deal just with you and her, and everything else will become mere setting. You can open it with a short sequence of golf, swimming, tennis, sun bathing, diving, and what not, and then go on to develop these activities at greater length.

Why not divide your personal vacation reel into sections, devoting each of them to the special interests of yourself and your companion? Thus a title, *Joseph spends the summer afternoons with Royal Coachmen,* would be followed by a sequence of him, casting a fly into the riffle of some mountain stream. When Joseph has tangled his line in the bushes and when his companion has spent fifteen feet of film in getting it free, there is a second title, *Elsa is another Compleat Angler,* and she is shown, prone in the corral, getting an angled photograph of a cowboy, while he saddles a pony.

To help us to plan films in advance, it is easy to make a collection of travel folders and guide books. A study of them will reveal many subjects of interest and many themes for sequences; the photographs may offer ideas for views of well known local features. One movie maker made a fine study of Port Royal, in Jamaica, after he discovered, in a biography of Morgan the pirate, that remnants of the old city still exist, five minutes away from Kingston. These booklets are invaluable, later, for identifying scenes and for titling.

A travel movie need not always be a record, without any expression of opinion. Although doing this calls for genuine skill, a film may be made from a basis of personal prejudice. The basis may be selected in advance, from preconceived notions, or it can be chosen after arrival.

Do you really dislike the place? Show why. Do you believe that the natives' lot, like that of policemen in Penzance, is not a happy one? Prove it on film. Turn disapproval into visual argument, distaste into screen demonstration. If you are fond of the place, reverse the theme.

Good fortune, then, or bad is your subject matter. Suppose that it rains, most of the time. Film the rain and make a point of it. After a few sunny views, a title would remark, *But presently, of course—*, and subsequent scenes would show gathering storm clouds, rain pattering in the dust, everybody flying for shelter and, finally, the downpour.

You watch the rain despondently, until a great idea emerges, and you quickly seize the camera. You show concentric rings in the puddles—streets, slicked down and shiny—natives, rushing pell mell for protection, or huddled under trees—the spray from tires, as they roll over cobblestones—sodden, dripping leaves. A film in a thousand!

And, just about then, the sun comes out.

## CHAPTER X

## FILMING PUBLIC EVENTS

IN FILMING public gatherings, we have a double objective.

First, and most obviously, we must get scenes of the central event itself—be it a football game, a parade or a country fair. But, second, and equally important, are the people who come to see these events, and we must film them *en masse*, in small groups and as individuals.

An audience does not merely contribute to the excitement of any great festival; it actually *is* the festival, for a great many who go to see it. If anybody doubts this, let him imagine the flatness and boredom of a World's Series baseball game played to empty stands. The first caution in successful public event filming is, *Remember reaction shots!*

### *A football game*

Consider football, for instance. We know that half the fun of a big game is the color and excitement surrounding it. Yet, it is easy to forget this, in a stadium, with a camera.

Let us keep it in mind, at least, for a brief introduction which heralds the main event. Make this progressive, working from details and closeups to scenes that disclose the situation more fully. The tempo, at first, is very fast, but, as more is included in the viewfinder, the speed is reduced, to let our film audience observe the expanding action, in more detail.

Shooting directions for such an introduction could specify a progression to show: closeup of a poster announcing the

game; closeup of hands exchanging money for tickets (and be sure to use "stage money," to avoid tangling with statutes); semi closeup of a boy and girl buying programs or feathers, decorated in the colors of their college, from a vendor; medium shot of the dense crowd coming toward the camera; medium shot of the crowd, as it goes through the gates; semi long shot of the thousands, as they find seats (including only one section of the stadium and keeping the action still relatively close); medium shot, from a high position, looking down an aisle, as two friends reach their seats; semi closeup, as they buy peanuts, examine programs and then stare at the field in happy anticipation; semi long shot of the opposing teams running out on the field, while the cheer leaders go mad. Here are nine short scenes, yet, with their aid, we have got down to the day's business and have shown the thousands who are with us.

Now comes the game itself. If you have been lucky and provident, your seats are on the west side of the field (putting the sun behind you) and fairly high. A movie maker with only a usual lens will find his best position, much nearer to the field. But, for the very best results, go high, if you have a telephoto lens, and take a unipod with you. At least, use a breast strap support with this lens, or your screen results will be unhappy. Tripods are pretty generally frowned on, both officially and unofficially, at football games, unless you have a reservation in the last row of seats.

If black and white is your film, let it be the fastest obtainable, for the increased speed will be a boon in boring into late afternoon shadows or in facilitating the use of slow camera speeds (twenty four and thirty two frames a second). But, if you cling to color—and who doesn't, for such colorful activities?—plan most of your shooting for the early, sunlit parts of the game.

So much for the important technical preparations. There are considerations, no less ponderable, that will affect, in large measure, the successful choice of subject matter. These have

to do with the scenes of football action that you will select and with your method of selecting them. Any football enthusiast knows that, by and large, line bucks are least dramatic, while end runs, pass plays and punts are a constant source of action and excitement.

But how shall we select them, when valuable film is at stake? One of the best ways is to study the players in advance, so that you may know what plays are proverbially successful, when they make them. Is Number Ten, of the home team, hailed as a forward passer? Is Number Twenty Three, for the visitors, a galloping ghost around the ends? Then, during the first quarter of the game, study the formations for these plays, to be ready for them in the rest of the game. When you see a good chance for a pass, begin shooting at the huddle and hold the button down until the play is grounded. Only in this way can you hope to avoid those irritating and irresolute results that give but a part of an exciting play. A good football record does not invite film economy.

As the afternoon passes, the field is likely to be divided into sharply defined areas of light and shadow. This situation calls for quick exposure changes, as the play shifts from one area to the other. You may encounter rain, which does not prevent filming but which demands care, in protecting valuable equipment from damage. Some professional football filmers have gone to elaborate lengths in "rain proofing" their cameras.

*Human interest*

Between the high points of field action, turn your attention once again to human interest and to reaction shots. Don't worry about their order. They can be put into effective position later. Here are some of the many scenes that help: a long shot across the rows of seats, as the great crowd rises, *en masse,* in a burst of cheering; a medium shot of persons near you, in an exciting moment; a semi closeup of your friends, as they belabor each other in frenzy (staged, if necessary); medium shots and closeups of the peanut, "pop," and "hot

dog" salesmen; long or medium shots of the cheer leaders and their antics. Touchdown plays are essential; score board shots make fine titles and advance the story of the conflict, while the ceremonies between the halves are a "must" for any football movie.

For your conclusion, wait until the crowd begins to pour out on the field, in a dance of victory. Shoot sparingly in a long shot, and then try to catch as close a view as you can, with safety to the camera, when the goal posts finally give way. Show a scene of the happy, exhausted spectators wandering from the field, and end on a short sequence of the emptied stadium, to include a long shot of it all, followed by a semi closeup, showing a litter of tattered programs.

*Filming a parade*

The plans and problems of filming other public events are similar to those of our football movie. Parades are popular, but pictures of them are often disappointing, for they lack a background of preparation. "What's all the shootin' for? What's being celebrated, anyway?" As we noted in Chapter V, the introduction is all important.

In filming the parade itself, there are a number of points to keep in mind. First in importance is the matter of position. The serious cinematographer will discover, in advance, the exact route and go over it at a time of day, as close as possible to that of the event, to determine light conditions. For color shooting, he will decide on a camera position that gives front lighting, at the best, side lighting, if it must be, and back lighting, rarely. For monochromatic film, such exact care need not be taken, but the cameraman should keep in mind the standard rule of exposing for the shadows, if they are deep. Good lighting must be the first consideration.

When there is choice of equally well lighted spots, a position at a corner, which is opposite to that around which the parade will turn, gives excellent results. Safety islands, in the centers of broad streets, are shooting positions made to order, if you

are permitted to use them. Second or third story windows along the line of march are advantageous, but a telephoto lens is advised for scenes that are made from them.

Wherever you are, there is one positive rule of parade filming: *Avoid shooting action that takes place at right angles to the line of sight of your lens.* This action is always too speedy for the relatively slow shutter of your movie camera, which cannot smooth it out. The result of such a shot will be a bad case of "jitters." Moving objects, wherever we film them, are more safely pictured when they are either coming toward or going from the camera, at an acute angle.

So they pass, rank after rank, float after float. Although it is the supposed essence of color and excitement, a parade—in movies, at least—soon becomes dull and monotonous. The action is repetitious, and breaks are needed between the similarity of advancing groups.

So, human interest shots become a double essential, serving both as interludes and as an important feature of the show itself. Catch them, as opportunity offers, and put them into their proper place later. Shoot the crowds in medium shot and closeup. Get souvenir salesmen and balloon hawkers, "cops" and children, flag wavers and popcorn eaters.

Built up a "running gag," if you like, of an attractive youngster, seated on the curb, with eager eyes and an insatiable appetite. Come back to him, now and then, as the action lags, and use him to end the film—the last, and still hopeful, spectator. If you buy the ice cream, he will provide the humor, unaware.

*Other events*

Race meets make good movies, whether they feature men, animals or machines. Not too much freedom is available at any of these, in moving about, to film the main events, but we can enliven our records with plenty of human interest. Try to get behind the scenes, at various times, before the race. Show the training and preparations. Look ahead to the ac-

tions of the race and try to stage now, for your camera, some exciting closeups and medium shots that will be put into the film, later—the starter's pistol, the tense crouch of the coxswain, the flash of pounding hoofs in the track. Just before the actual race, authentic bits of atmosphere may be obtained near the betting booths, in the cars of the crew train and in the viewing stands. Using these as an introduction, and as contrast, during the meet, you will achieve a more convincing record of the main event.

In all contests, the method of alternating shots is serviceable, to indicate rivalry. One boat is seen, with the aid of a telephoto lens, while its crew strains every muscle, to gain advantage. We cut to a scene of the opposing crew, even more tensed for victory.

The familiar amusement park is a movie setting. Here, there is an impression of everything happening at once, with plenty of noise and excitement. Instead of a single event, occurring in ordered progression, dozens beckon on every side. To suggest them, some cameramen, having more specialized equipment, will ornament their presentation with a variety of multiple exposures and other devices of distraction, interwoven with the main flow of the film.

But the simplest camera can catch a series of brief, revealing closeups and can employ the interesting angles that go far, in telling the story. To tie these shots together, take your youngster to the park and turn him loose. Follow his ideas of what is interesting—and film what he sees, with his willing cooperation. But, while you record his actions, against the background of merry go round, giant swing and "shoot the chutes," don't forget the importance of the surrounding human interest, the crowds, the "barkers," the food and the flags.

Country fairs are worth a visit with your camera. As an introduction, feature the activities near the entrance gate—the cars, the crowds, the friendly greetings and the large family,

burdened with the day's food. Move in with them to the fair grounds.

Get a program, and look over the order of events, planning a sequence of the cake contest and a series of them, to show the stock judging. Study the lighting, to get the most from the bulging muscles of work horses and the sleek coats of prize winning cattle. Remember reaction shots of proud owners, and please them and yourself, by posed shots of the winners. Don't miss exhibits from the 4-H clubs and from other junior groups. The delighted parents make good subjects.

These are only some of the public events that you will want to film. Not infrequently, your town will be visited by personages whom everybody will unite to honor. A movie record of these incidents will bring the great world home to your friends in later years, as they say, "Yes, he was right here and we talked to him. Remember what he said to you, Bill?"

The graduation ceremonies of your children should be filmed, and you can get any number of staged shots, to add to them. Is there a pageant or a dance festival to which you have contributed underwriting? If so, there is an opportunity for a personal dividend and a chance to please your friends who take part.

In filming these, the emphasis must always be dual. There is the central feature, yes. But—and it cannot be said too often—there are the people who see it. What they do and what they look like will, in the years to come, tell your grandchildren about the world, as your generation knew it.

## CHAPTER XI

## MAKING THE FILM READY TO PROJECT

MOVIE making offers a twofold opportunity for self expression. When you are filming, you can follow any theme and record scenes according to any sequence. When you edit, you can change that theme and rearrange scenes or eliminate them.

Through "editing," you can combine short rolls of film, returned by the processing station, to form longer reels, more convenient for projection. You may excise mistakes; overexposed shots may be taken out and scenes with other defects can be removed.

If you loaded the camera in bright sunlight and fogged the beginning of a reel, the damaged film length may be discarded. If lens flare spoiled a shot, this footage may be eliminated. In short, by editing, you can bury your cine sins.

Editing is also a means of complete control over the movie medium. You can trim scenes to the desired length; you can improve the film's continuity, by rearranging the order of certain shots and by inserting others that may have been made at a different time or place. Editing lets you clarify the film story, by inserting titles.

Careful editing is almost as important as planning the film in advance. In fact, through editing, you can often achieve a continuity, even if none was planned when the film was exposed.

Editing requires handling a film during a number of operations; it is advisable to use great care in the procedure, for a

small scratch on the emulsion or a grain of dust will be magnified into a blemish in the picture, when it is screened. Hold the film by the edge, when you take it in your hands, wipe emulsion fragments off, after splicing, and wind the coils tightly, in transferring film from one reel to another. Fastidious movie makers wear white cotton gloves when they are cutting, splicing or rewinding film; this is a particularly valuable precaution in handling full color film.

*Tools of editing*

The most important tool of film editing is the "splicer," a mechanism that allows you to join the ends of film permanently, by applying cement.

There are several types of splicers, each of which is provided with an instruction booklet that explains its operation. However, all these accomplish the same purpose and, with each, the fundamental procedure in making a splice is as follows:

1. Place over the guide pins of the splicer the two ends of film that are to be joined. When you splice original reversal film to original reversal film (including full color), both ends of the film are placed in the splicer bed so that *the emulsion faces upward.* The side which is coated with emulsion has a dull surface; the uncoated side has a shiny surface.

2. Operate the splicer, to shear the two opposing ends of film neatly. All splicers provide an automatic means of doing this, and instruction books make the procedure clear.

3. Scrape the emulsion off that part of the end of the bottom film strip which is to be overlapped by the top film strip. Splicers have guides, which indicate this protruding area on the bottom film strip, and also scrapers with which one removes the emulsion.

Some splicers require that the emulsion in the area of the splice be dampened slightly, before it is removed with the scraper. This is done by wiping the emulsion's surface with the end of a damp finger or with a felt pad that has been

moistened in water. One should apply just enough moisture to soften the emulsion within the area of the splice.

The scrapers of other splicers, known as "dry," do not require that the emulsion be loosened, first, by dampening. These scrapers are corrugated, like a file, and remove emulsion by rasping. "Wet" and "dry" scrapers operate equally well. Their purpose is to remove emulsion neatly and cleanly from the area of the splice, leaving the film base clear and translucent.

After removing the emulsion, clean the area of the splice with a brush or a piece of lintless cloth. No particles of emulsion should adhere to the bare film base, because they will weaken the splice.

4. To the area of the splice that has been scraped free of emulsion, apply cement with a quick, even brush stroke.

5. Immediately operate the splicer (following directions in the instruction book), to bring the overlapping ends of film into contact and to hold them there, by pressure.

6. After an interval of a few seconds, remove pressure and, while the film is still on the bed of the splicer, clean the area of the splice with a soft cloth, to remove emulsion fragments and excess cement. Then, take the film from the splicer guide pins and test the splice, by holding the film in your hands and giving it a firm tug. If the splice is made properly, it will not part.

Through experience, splicing becomes a simple and almost automatic operation, and one rarely produces a bad splice. But the beginner faces a few hazards. He may not remove the emulsion completely from the area of the splice; this must be done, because the cement affects the base of the film only. This cement is not a glue, but a solvent that partially dissolves the substance of the film base and, thus, welds the two film lengths together. Because of this fact, a properly made splice is just as strong as unbroken film.

Enough cement must be applied, to cover the area of the splice with a thin coating of the fluid, but, if an excessive

amount of cement is used, it may seep beyond the spliced area and stain the film.

In early experiments in splicing, allow the cement to "set" for about twenty seconds; as you gain experience, you will learn to judge the minimum amount of time that is required for it to dry. At first, one may be impatient, and remove pressure too soon from the splice.

Keep the bottle of cement corked, between operations, for the fluid may thicken quickly by evaporation and lose its efficacy. It is well to recork the bottle, immediately after cement has been applied.

Cleanliness is important in splicing, because crumbs of emulsion, scraped off the spliced area, may adhere to the film. In projection, these emulsion particles lodge in the projector gate where they are hardened by heat from the lamp. Ultimately, enough hardened emulsion may collect, to scratch the surface of the film.

Therefore, before you remove the finished splice from the splicer bed, wipe it carefully. Then, after testing the splice, again clean the area of film on which you have been working.

Films cannot be spliced without the aid of a splicer, because the ends of the film strips must be held in exact alignment, when the splice is made, and because the extent of the overlap must be precisely correct, so that there will be no variations from the proper distance between sprocket holes. Otherwise, the film will not run through the projector. The splicer, although it is a simple device, capable of much use, and even abuse, is an instrument of precision.

You may want to splice a print of footage, originally recorded on negative film, to a length of reversal film or to splice the duplicate of one reversal film to the original footage of another. Both prints and reversal duplicates are prepared so that the emulsion faces away from the screen, when the film is projected. Hence, in splicing prints to reversal film or reversal film to a duplicate of reversal film, the ends of the strips are placed back to back, and it is not necessary to remove emul-

sion, because the shiny, or uncoated, sides of the two films are brought into contact.

This method cannot be followed, in splicing two pieces of original reversal film—black and white or color—because the image of one film strip would be reversed in relation to the other. The illustrations on page 163 make this fact clear.

*Rewinds*

An important tool of film editing is the "rewind." This is usually a substantial baseboard, to each end of which is attached an upright pedestal, supporting a geared spindle that is operated by a handle. The reel of film is put on one spindle, while an empty reel is placed on the other. By turning the handle, film may be wound on the empty spool slowly, or rapidly. Some rewinds have only one geared "head," but two of these are more convenient. For continuous work, a motor driven rewind is available, with a foot switch for speed control.

*Film viewers*

Another editing aid is the "film viewer" which lets one inspect film, without setting up projector and screen. In its simplest form, a viewer consists of a pocket magnifying glass, backed by a channel of appropriate size through which the film passes. The magnifier can be adjusted, to focus for individual sight; a source of light must be provided, to illuminate the film from the rear. A more advanced type of viewer incorporates a complete rewind; in this mechanism, the film is always aligned correctly in the channel of the viewer's eyepiece.

Another form of viewing device provides, instead of an eyepiece, a miniature viewing screen, upon which may be projected the enlarged image of any one frame. A more advanced form of this device projects the picture on the miniature screen, in full motion.

*How to edit*

Suppose that you have planned a simple film, in advance, and that most of the scenes are in the desired order, or con-

tinuity. In editing, it will be necessary only to splice the spools of film together and to wind them on a larger projection reel, to cut away the few scenes that turned out badly, for one reason or another, and to insert titles. Perhaps one or two shots were not filmed in the sequence in which you want them to appear. These you will cut out and shift to their proper places.

Most amateur film editing is of this variety, and the work involved is very simple. First, provide yourself with two empty 400 foot projection reels (if the film is 16mm.) or 200 foot projection reels (if the film is 8mm.). You may have a long picture and may require several of these reels, or you may use reels of still larger capacity.

Also get several empty, small projection spools, to use in storing, temporarily, lengths that are cut out, to be shifted from one place in the finished movie to another.

Then, set up the projector and screen and project the rolls of film, one by one. As you do so, make notes of the shots that are to be removed and of the scenes that are to be shifted from one place to another. You may also want to shorten some scenes. Project the film slowly, and do not hesitate to reverse the machine, to take a second look at a scene, if you want to study it again.

When you have completed your notes, they may look something like these, without the explanations in parentheses:

Roll 1.

1. Cut out laboratory's perforated marks at beginning of first scene.
2. Cut out scene of car in garage. *(Underexposed.)*
3. Cut out scene of Mother holding Baby at car window and splice into second roll before scene of waterfall. *(By this change, it will appear that Mother is holding Baby at the window, to look at the waterfall; we shall have made a good scenic shot more interesting.)*
4. Cut in half the traveling camera shot that was made through car's windshield. Use part between two scenes of

the car and part between two sequences of scenic shots. (*The traveling shot was longer than necessary; a part of it could be used between two shots of the car, as it is driven past the camera, and another part could be shifted to a later portion of the film and used there, to divide a lengthy series of scenic shots.*)

5. Cut end of scene of cows in meadow. (*Camera unsteady.*)
6. Shorten scene of mountains. (*A lengthy long shot is monotonous.*)

Make similar notes about each roll of film, and, after projecting each of them, rewind it at once. When you have finished studying the rolls of film and have completed your notes, you are ready to edit.

Begin with the first roll of film. Place it on one spindle of the rewind and cut from it the several frames that bear perforations, placed on them by the laboratory for purposes of identification. You are now dealing with footage that you intend to use, and which will, in the finished reel, be the first to pass through the projector. So that it may be threaded without involving the beginning scene, a "leader" should be provided, which is a length of blank, white film. Use the one that was spliced to the first roll by the laboratory. A leader is important, because it provides a length of film, for use in threading the projector, and because it protects the outer coil of film on the reel. Two or three feet of leader should be spliced at the beginning of each large reel.

After the leader has been added, wind the film slowly on the empty, larger projection reel, placed on the opposite spindle of the rewind. As you wind the film to the larger reel, make the changes and corrections in succession, as you reach them.

When you arrive at the end of the first roll of film, cut off the laboratory's perforated marks and any film beyond them. Remove the empty spool and place the second spool on the vacant rewind spindle. After excising the leader at the begin-

ning of the second spool, splice this new footage to the end of the film on the larger reel, and continue operations.

A shot that should be shifted from one part of the film to another is removed and is wound on an empty, small spool, which is put aside, until you reach the place where you plan to insert the deferred footage.

When the editing is completed, all the film will have been wound on the larger reel. Then, to the end of the movie, splice a trailer—a "leader" at a film's end, serving the same purpose there, as at its beginning. Place a second larger reel on the vacant spindle and wind the film backward on it. The picture will then be ready to project.

Editing is simpler, if one works always with film running in the same direction. You will note that we began at the beginning of the reel, and worked toward its end. Then the film was rewound to the beginning, to make it ready for projection.

When one removes a scene from the continuous film, so that it may be shifted to another place, there is some possibility of confusion. The separate strip might be inserted, so that the scenes would be upside down or the emulsion would face wrongly, in relation to the rest of the film. Observance of three simple cautions will avoid this error.

1. Be sure that the strips of film lie flat—that they are not twisted.
2. Be sure that the dull sides (which bear the emulsion) of the opposing ends of film in the splicer bed are both facing upward (unless one of the film strips is a duplicate or a positive print, which have been discussed earlier).
3. Make sure that you are splicing the top of one frame to the bottom of another. (The beginning of one scene is spliced to the end of another; if this splicing is not done, the frames in one scene will be upside down, in relation to the other.)

The illustrations on page 163 clarify this system.

After editing, clean the film with folds of soft, lintless cloth, held in the hand between the rewinds. (This may be done while you are rewinding the film, to make it ready for projection.) You will be amazed by the quantity of emulsion fragments and other dust that the film will have picked up during the editing process, despite your care in making each splice.

If the film has been much handled, it may be advisable to moisten the cleaning pad with more carbon tetrachloride or with film cleaning solutions, provided by film manufacturers. However, unless the film has been soiled by fingerprints, this is not recommended with Kodachrome, and no cleaning fluid should be used with Kodachrome, unless it is specified for the purpose by the manufacturer of that film.

When you have finished editing, you will have the pleasure of viewing the film as a whole and of noting the great improvement that has been made by your changes. You will find that eliminating a few faults and shifting a few scenes will have improved the quality of the whole movie.

You may decide that further changes will help. By all means make them, for, when you learn to criticize your own work, you will have passed another milestone on the road to good movie making. You may find that transition scenes are missing and that you will want to film these later. You may discover that a sequence lacks an important closeup. Perhaps you can get this later, too, or that may be impossible, and you may have to content yourself with resolving not to make the same mistake again.

Look at the film a second time, more critically. Have you been too lenient? Are shots still in the reel that should come out? Remember that you have a natural disinclination to eliminate anything, for, at first, doing this seems wasteful. But a good movie is your objective, not the mere conservation of film footage.

Then, too, you can preserve the excerpted scenes on a separate reel and, from this, you can compile a roll of "seconds," to be looked at privately from time to time. If, for any reason,

you feel, later, that a given scene is indispensable, you can splice it back into the reel.

On a reel of "seconds" or "stock shots," you also can preserve those scenes that present no difficulty, so far as film quality is concerned, but which contain matter that is extraneous to the movie in hand. You will find spots for these scenes, in later pictures.

After editing, the next step is to splice titles. If the titles were written when the film was planned, and were made soon after, you may splice them into their proper places in the first editing. However, if the titles are to be written after the film is made, you will probably want to postpone writing them until you have seen the picture in its edited state. A discussion of title writing and title making follows at the end of this chapter.

*More elaborate editing*

When one is following a scenario or is producing a serious film of any type, it may not be convenient to record scenes in the order in which they are to be projected. All the indoor shots of the movie might be made at one time and all the outdoor shots at another time. Then, the process of editing must be more elaborate.

It will be necessary to separate the whole film, or large parts of it, into the component scenes. These are catalogued, according to a system, and are reassembled in the new order, following the script, if there is one.

This necessitates some method of storing numerous short lengths of film and of keeping them in order while you are working. These scene lengths can be wound into small coils and placed in numbered, round pill boxes, in typewriter ribbon cans, in shallow, round holes, drilled in a soft wooden plank, in compartments of egg boxes or in any pigeon hole arrangement that will serve the purpose. Each compartment is labeled with a number which refers to a numbered card, on which is writ-

ten a description of the scene. Thus, the contents of any pigeon hole may be identified by reference to the numbered cards.

Another way to segregate scenes is to secure each of them at one end, by a spring clothespin, and to attach each of these to the top edge of a barrel or waste basket, lined with soft cloth. Each clothespin is numbered, to identify the film strip that it supports, while the ends of the strips are allowed to fall, loose, inside the barrel.

There are numerous methods of segregating and storing the separate scenes, and one's own choice depends upon his taste. But the important thing is not to allow film to coil indiscriminately over desk or floor, where it may be scratched or may pick up dust. Loose film strips will invariably become tangled, and you will waste a great deal of time in hunting for the one that you want.

When a method of storing film clips has been devised, thread the projector with the first roll of film to be edited, but omit the takeup reel. Let the film run off on a clean, flat surface, instead. A square of white cardboard, propped upon a desk top, will serve as a miniature screen, and the projector image may be focused upon this. It is not necessary to turn off ordinary lights for this miniature projection, as the image will be bright enough. Specially made, shielded small screens are also available for this purpose.

Place the rewind close at hand, and obtain a notebook or some blank cards on which to record the salient points of each scene. As the film comes out of the projector, stop at the end of each scene, cut this scene out of the reel with a pair of scissors, place it in its identifying compartment and make a note, describing it. For winding in small coils, handy, single flanged editing reels are available. The film can easily be removed from these in a roll, ready for placing in its proper compartment.

It is not necessary to write an involved description of each scene. All that you need is a series of identifying tags that will recall to you what the scene contains, when you come

to the later rearrangement. A note like this will usually suffice:

> *Scene 3.* Jane comes out of door; met by dog. They walk out of scene.

This kind of note will usually give you all that you need. Naturally, if the scene has special characteristics which you will have to know, in editing the film, later, you must add these to your notes. For instance, besides listing Jane's action in the scene, it may be necessary to add, "wears red dress, no hat." This information will prevent you from using, for the next scene, a shot in which Jane appears in a blue dress and a broad brimmed hat.

While you are cutting the film, ideas for appropriate titles may occur to you. Jot them down on similar cards, relating them to the nearest scene, thus:

> Following
> Scene 3.
> Title: *Jane decides to explore—*

You may wish to plan the titles later, after you have rearranged your scenes.

After this procedure, the actual editing is done, by studying the separate cards and by rearranging them in a new order, which represents the final continuity.

After the cards have been finally arranged, the film strips are spliced together in the same order. Since each strip is indexed and is readily accessible, this step is simple. Titles may also be spliced in now, if they have already been made. Some film editors insert a short strip of blank film wherever a title is to be added, for later convenience in splicing.

Having spliced the film together, you will find it advisable to project it several times, to make sure that the relationship between scenes is as smooth as possible. Such a checking may suggest minor changes, and it will reveal any accidental errors. It will also give additional aid, in planning titles. It may be desirable to shorten certain scenes, but we can better reserve this process until the last, because, once scenes have been

shortened, it is not easy to lengthen them again, except by awkward splices.

The mechanics of editing can be reduced to routine simplicity, while the real fun of editing is the magic that you can work, by rearranging scenes and sequences. Editing, and the proper admixture of titles, will make a movie continuity grow out of a hodge podge.

Suppose that you have a few sequences of a college reunion —an unplanned movie, made in haste. Let us say that the sequences were filmed in the following order:

1. Close shots of friends on porch of college inn.
2. Group of alumni arriving on late train.
3. Sequences of horseshoe pitching and of golf.
4. Shots of car, filled with alumni, arriving at campus.
5. Scenes of open air luncheon.
6. Medium and semi closeup scenes of a group of alumni singing.
7. Scenic views of campus.
8. Parade.
9. Car filled with alumni, driving slowly away from camera.

Searching for a continuity for these scenes, one thinks first of the obvious plan of showing alumni arriving at the campus, engaging in activities in logical sequence and then departing. But why not begin with the college and end with the college, since that is the most important thing? Then, within this bracket, we can present a logical continuity. Thus, the scenes might be rearranged as follows:

Title: *Once each year, Summit College recalls her sons . . .*

A. Scenic views of campus. (Part of 7, but save the best shots for later use.)

B. Group of alumni arriving on train (2).

C. Shots of car, filled with alumni, arriving at campus (4).

D. Close shots of friends on porch of college inn (1).

E. Scenes of open air luncheon (5).

F. Parade (8).

G. Sequences of horseshoe pitching and of golf (3).

H. Group of alumni singing (6).

I. Car filled with alumni, driving slowly away from the camera (9).

J. Best scenic views of the campus (part of 7).

Additional titles will help to tell the story. Before sequence D, a title that introduces the thought that we are meeting old friends again could be inserted; before sequence H, a title could be used, to indicate that alumni are reluctant to leave. Before J, one could insert a title, such as,

*But when the twentieth reunion comes, Summit will still be there.*

When a movie has been carefully planned, before it is filmed, editing offers opportunity for further refinement. Often, you can "intercut," that is, alternate scenes of action, made at one time, with those of different action, made at another time. For example, suppose that we filmed a country fair and that we took some excellent shots of livestock judging. Suppose that, later, we made scenes of various types of people watching something that is not included in the lens field.

Perhaps we have shots of a little boy, of two elderly women and of a stout man, all gazing past the camera, their attention held by something of interest—it does not matter what, since it is not seen.

We could intercut the two sets of scenes and show: shots of prize cattle—stout man looking at something (presumably at the cattle)—more shots of cattle—shots of elderly women gazing past the camera—shots of judging cattle—little boy looking intently past the camera—shot of the blue ribbon steer. Thus, we can introduce the human element and make the scenes of cattle judging more entertaining.

Of course, this method could not be followed, if the scenes of the intent faces were obviously made in one part of the fair

ground and the views of cattle judging, in another. However, one part of a country fair ground looks much like a second, and, if the views are close, the audience will not know the difference.

We can also intercut, to make it appear that two things are happening at the same time. For example, we have a series of scenes of George building a camp fire and another series of Helen mixing batter for pancakes. We cannot make sequences of both operations at once. We should film George building the fire and *then* film Helen mixing pancake batter. But, in real life, these activities would take place concurrently, and we can make them appear to do so on the screen, by alternating scenes of George and Helen, thus:

1. George chopping wood.
2. Helen, at camp table, opening box of pancake flour.
3. Semi closeup of Helen pouring flour and milk into bowl.
4. George building fire.
5. Helen beating batter in bowl.
6. Semi closeup of George lighting fire.
7. Helen greasing skillet.
8. *(We bring our two sets of parallel action together.)* This shot shows George at the fire, which is now burning well. Helen enters the scene, carrying the skillet.

Often, in filming, we start the camera before the significant action of the scene begins and allow it to run for a few seconds after the action is completed. In editing, we can trim out the unnecessary footage and improve the film's tempo greatly. For example, we have a shot of a bicycle lying by the road; Jack enters the scene, mounts the bicycle and rides out of the lens field. The shot continues for a few seconds. Obviously, this scene could be trimmed. At the beginning, we could cut the shot at the first frame in which Jack begins to enter the scene and, at the end, we could cut it at the first frame after he had entirely disappeared.

If the subject matter of a shot is static or if the action is continuous, you must judge, for yourself, the proper length of its footage. But don't permit the scene to run longer than the time that is required by most persons, to grasp the important details of the picture. It is a common amateur failing to be too lenient in using scissors.

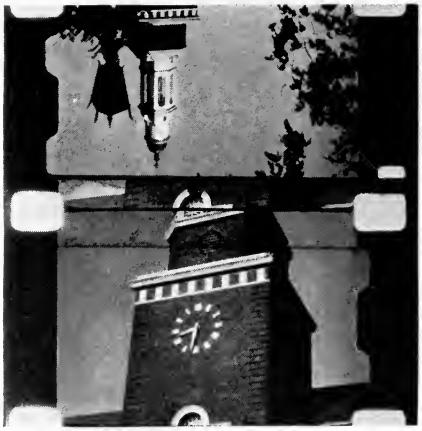
"Cutting on action" is an involved editing practice that may be required in photoplays and in special purpose movies of other kinds. When two successive scenes represent continuous action, it is necesary to match the action in the last frame of the first scene with that in the first frame of the second scene. Suppose that we film a character raising a cup of coffee to his lips and that, while he does this, we shift the camera from a medium shot to a semi closeup. Actually, it would be necessary to ask the actor to raise the coffee cup to his lips twice—once, when we film the medium shot and, again, when we film the semi closeup.

Then, in editing, we should cut the end of the first scene after a frame showing the coffee cup, midway in the air, and we should trim the beginning of the second scene before a frame in which the coffee cup occupied almost the same position. When the two scenes were spliced together, the motion of the hand raising the cup would be continuous, in spite of the shift in viewpoint.

As your knowledge of the fine points of editing progresses, look over your older films, to see how they could be improved. By reediting an old reel, you can make a new picture. It is fun, too, for editing is a challenge to your ingenuity.

### *Writing titles*

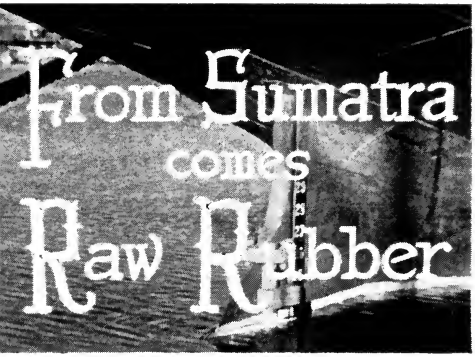
There are two basic types of titles, and these may be used in any movie. First, there are the captions that introduce the picture and, second, there are those that appear in the body of the film. These two varieties of titles differ in purpose and they differ both in style of composition and in physical appearance.



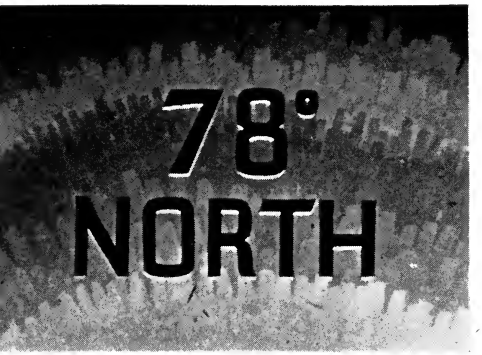
Above, left: this is what happens, if the wrong end of a strip of film is spliced to the preceding scene. One scene is upside down, in relation to the other. Above, right: this is what happens when ordinary reversal film is spliced, shiny side to shiny side. The words in the sign at the top are reversed, as if they were seen in a mirror.

Reversal film, correctly spliced. The top of one frame is joined to the bottom of the other.

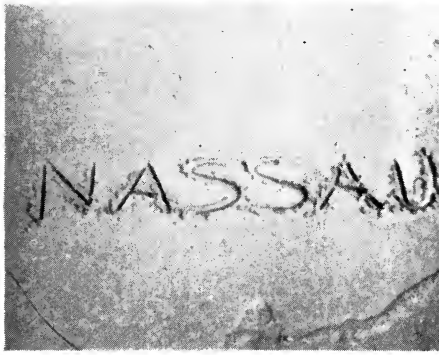
Frances Christeson, ACL,
and Harry V. Merrick, ACL




Lewis B. Sebring, jr




Robert W. Nutter, ACL




George E. Tomlinson

Frame enlargements of titles in amateur movies. The title, NASSAU, was drawn in sand, and it was filmed with reverse motion, as a wave washed it away. Below, a sign post serves as a title.

Jess Leverich, ACL

Mildred Greene, ACL

Titles that introduce the film, consisting, at a minimum, of the name of the movie and the name of its maker, are called "the lead title assembly." This may be expanded to include additional "credit titles," lists of players and a dedication or foreword; the number of titles depends upon the intention of the movie and upon its importance and length. But the primary service of a lead title assembly is to identify the picture and to record names and facts.

However, the "main title," or name of the film, and the foreword, if one is used, may serve a second, and but slightly less important, purpose. This is the creation of interest in the film and the evocation of an atmosphere, suited to its subject matter. Thus, main titles—unless they are written for record films—need not, and should not, be too bald. too matter of fact.

*Our Trip to Hawaii* gives the name of the film and tells what it will show, but it does little else. Its effect is deadening. The identification is so complete that it leaves no room for curiosity. The wording is factual, commonplace and without grace.

Write, instead, *Islands of Aloha,* and note the very different effect. Here, too, is a name, but it *suggests* the subject of your film, instead of stating it bluntly. There are overtones of emotion, and the imagination has room to stir about. The wording is melodic and graceful, not threadbare, from daily usage.

The selection of such wordings is not governed by exact rules, but, rather, by esthetic concepts. The presentation of a lead title assembly, however, should be planned to accord with accepted practice and with good taste. These vary with the type and importance of the film.

In a picture that will be shown only to your family and friends, it will be obvious that you are the cameraman. The concern of first importance is the subject matter of the movie; the main title is, therefore, placed first. It may be lettered on a plain card or on a simple pictorial background that will suggest the film's content.

When it is given at all, the name of the filmer appears in the credit title. Since this caption is necessarily an adjunct to the main title, it may be introduced smoothly, by dissolving to it from the main title. A cut would serve nearly as well, but the intrusion of a fade out and fade in, here, is undesirable.

The credit title should be lettered in the style of the main title and on the same type of background. A slightly smaller type size, however, may be used, to indicate the relative importance of the main title and of the more personal credit title.

Generally accepted forms for personal credit titles are: *Photographed by John J. Smith; Photography by John J. Smith; Filmed by John J. Smith; Produced by John J. Smith.* If the filmer is a member of the Amateur Cinema League, he may well add after his name the identifying initials, ACL, recognized the world over as the emblem of a competent movie maker.

Bombastic credit title phrasings, which should be avoided, are: *A John J. Smith Production; From the Camera of John J. Smith,* or *John J. Smith Presents.* The especial weakness of the last of these is that, in using it, the credit title must appear before the main title, which, in personal pictures, is pretentious.

Captions inserted in the body of the film, to meet specific needs, are called "subtitles." Their composition is governed primarily by the use for which they are intended. Their most fundamental service is to give information that the audience will need, to understand the following sequence. A simple example of a subtitle is: *The Grand Canyon, more than a mile deep.*

Another important function of a subtitle is to link sequences. It may bridge a gap in time or space, or in both, that is created by a transition which is not represented in pictures. So we could have: *From lunch at the Myrtle Bank to laughter at Bournemouth Baths.*

A subtitle can also suggest atmosphere or stir the imagination of the audience, to accord with one's own feeling about a

sequence. A single caption may serve all these purposes.

By rewriting the informative title already given, we might evolve: *The Grand Canyon—deep wrinkle in Dame Nature's face.*

Subtitles also tell us what characters say. A child is seen, playing in a yard. The scene shifts to show Mother coming out to a porch. She speaks to the child, and what she says is shown by words in quotation marks, *"Daddy's Home!"*

A few simple rules will guide us in choosing wordings for subtitles.

Avoid "tipping off"—telling the audience, by means of a title, exactly what it will see in the scenes to follow.

| This | Not This |
|---|---|
| *A cool haven in a hot country—Bournemouth Baths.* | *We swam at Bournemouth Baths.* |

Avoid the depressing effect of unnecessary facts and figures.

| This | Not This |
|---|---|
| *Havana—from gray skies to blue seas.* | *Havana—1400 miles from New York City.* |

Try to write titles in an impersonal manner, except in essentially personal films.

| This | Not This |
|---|---|
| *To make hay while the sun shines is still the rule.* | *We saw the farmers haying and rode on the hayrick.* |

Avoid a telegraphic style.

| This | Not This |
|---|---|
| *Jamaica's green gold pours into north bound steamers.* | *Loading bananas Jamaica.* |

Follow regular rules of grammar and punctuation.

| THIS | NOT THIS |
| --- | --- |
| *George Washington, hero and saviour of his country.* | *George Washington Hero and Saviour of His Country* |

Do not, except in compiling a lead title assembly, let one title follow another. Rewrite them, making only one, or separate them by scenes.

| THIS | NOT THIS |
| --- | --- |
| *Calling first at Kingston, we came to Jamaica, spice island of the Indies.* | *Jamaica, spice island of the Indies.* (no scenes) *Our first call was at Kingston.* |

Avoid the use of more than about twenty words on one title card.

| THIS | NOT THIS |
| --- | --- |
| *Distinctive dress marks clearly the natives of each community around Lake Atitlan.* (12 words) | *As one drives around Lake Atitlan, or goes about it by speedy motor launch, one sees that the natives have distinctive costumes in each village which identify them and the communities from which they come.* (35 words) |

A similar taboo is rightly leveled against that specialized titling technique which calls for a wordy exposition of a mass of facts on a scroll or "traveling title." Admissible only as a needed foreword at the commencement of a film, a "scroll

title" should not appear in the body of a picture; its content may be restated in shorter form or broken up into two or more independent captions, separated by scenes.

*Title styles*

Although subtitles may be lettered on cards that carry some form of decoration, or even over a suitable pictorial background, these should be of the simplest kind. Legibility is the most important attribute of a good title card, and anything which obscures this should be avoided.

The style and size of types used in lettering subtitles should not vary within a film. But the lead title may well have a special typographical dress.

Titles are commercially available in 8mm. and 16mm. widths. Prices are reasonable, and the cost of brief subtitles is very small indeed. You have only to give to a title making concern the wordings of your captions and instructions as to the type and background that you prefer.

Title making companies offer booklets, to illustrate combinations of type and background. Usually, a wide variety of type styles, borders and backgrounds is available, to suit every purpose. Titles for a cruise film can employ nautical backgrounds; captions of skiing films may be supplied with ornaments that suggest winter. Special backgrounds and hand lettering may be combined, to your order, for elaborate main titles, although these are not recommended for subtitles.

Commercial titles, designed for use with black and white footage, are generally printed on positive film, which has a clear base; those that are used with Kodachrome are most frequently recorded on emulsions that have a "purple haze," or blue tinted, base. Titles made on Kodachrome film are more expensive, although commercial companies will supply them.

*Making your own titles*

Many amateurs like to prepare their own titles. This process, from the choice of phraseology to the actual filming, is

fairly simple. Titles may be made without accessory equipment. Large, wooden blocks can be placed on a lawn or a table, where they are filmed by normal methods. Letters with adhesive backs may be taken on a filming expedition, and titles may be made "on location."

For less limited and more convenient title preparation at home, there is a device, known as a "titler." This holds the camera and the title card in fixed positions, with reference to each other, assuring sharp focus. Exposure is simplified by a uniform illumination which is easy to secure indoors, with artificial light. In this machine, title cards can be changed at will.

Titlers are of many types. One model is designed for use with small cards, whose area, as it is seen in the finished title, must exactly fill the film frame. To insure this, the distance between camera and card must be most accurately determined. Because of the size of the cards, it generally approximates seven inches; therefore, we need a supplementary lens, or portrait attachment, which was discussed in an earlier chapter. This supplementary unit is a part of the titler, and it is designed to come into place directly in front of the lens of the camera. When it is used with typed or printed cards, and with those that have been lettered legibly by hand, but in small characters, this titler gives satisfactory results, although it does not permit the employment of larger, movable letters. Special small letters are available for use with this device.

Other titlers are more versatile and, also, more expensive. With some of these, cameras of all kinds may be employed, as they are provided with means of locating any particular camera in an accurate position, with reference to the title card. The distance between camera and card may be varied at will; so, we may use cards of different sizes. Some of these more complex instruments possess revolving drums, spindles for scrolls and other devices that give variety in title choice and enable the filmer to secure many interesting effects.

Lighting title cards and other objects that are filmed in the process of making captions presents few difficulties. A light source may be held directly over the camera, in using small titlers. This may consist of a hundred watt lamp, which will serve very well, unless slow film is used. Exposures will vary with the subject and the kind of film in the camera, but the instruction booklets that accompany titlers generally give full information about diaphragm openings. Some titlers have lamp sockets in a permanent location. Inexpensive flood bulbs, that will be discussed in a later chapter, will give additional illumination, if this is essential.

*Preparing titles for filming*

Preparing your own titles is a twofold undertaking. Unlike most movie making, title filming demands that you first create your subjects and then record them. The initial part of the title making process is only indirectly cinematographic, because it deals with what will be filmed later—the title card. This may be anything from a sheet of wallpaper to a photographic print, on which the text appears by a number of methods.

Letters may be drawn, typewritten, printed with movable type or applied in the form of characters that are manufactured from metal, wood, linoleum, cork, modeling clay, or even rope. Only your ingenuity and the space that is available on the card set limits to your imagination.

Backgrounds must always be subordinated to the chief requisite of a caption, which is quick legibility. In lead title assemblies, we have the widest choice, because our audience is, hopefully, curious and attentive, which permits us to offer it two things at once, the title wording and its illustrative background.

Photographs are very popular, as main title backgrounds, because they can so readily be secured and because they may be made for this special purpose. A still picture, taken when the footage was filmed, will show the subject of the movie.

The print that will be used should be fairly dark, so that white title lettering may stand out well against it. Contrast of legend and background increases legibility.

Mottled paper is a pleasant background for titles within the body of a film. If you can get a wallpaper sample book, you will have a constant source of title material, because, if you employ movable letters, the same square of paper may be used repeatedly. Letters may be pasted on glass which is laid over the background. These expedients are unnecessary, if the background is not to be preserved for later use, and legends may be lettered upon it in ink, water color paint or oil.

If your draftsmanship is mediocre, you can improve it with lettering guides; if you enjoy playing with printers' ink, small hand presses will serve admirably, for you can, with their aid, print very neat and attractive captions. Persons who perform lettering commercially may be employed to make more elaborate titles.

The wide variety of movable letters that one finds indicates the popularity of this titling aid. Made of almost every conceivable material, these characters are of two chief varieties; there are those that must lie flat and others that will adhere to a vertical surface. The latter are sometimes magnetized, for use on metals; sometimes they have pins, by which they may be attached to a background. Others have gummed backs, suitable either for a single employment or for repeated adhesion.

Obviously, modeled characters of this kind are more widely serviceable, if they are capable of vertical application. If you will be using those that must lie flat, you should get a titler that will permit the card to be placed horizontally. If you use magnetic letters and wish to vary the background—which must, of course, be metallic—a thin sheet of paper may cover the metal, without affecting the adhesive quality of the letters.

Scissors and patience may advantage your pocketbook, if you will make a collection of letters cut from magazine advertisements, posters, calendars and leaflets. Edible alphabets,

designed for juvenile soups, games in which movable letters figure and the inexpensive characters employed in bulletin board wordings, cafeteria signs and other notices will serve the amateur title maker.

*Filming titles*

Our titles are prepared, now, and we must film them. We may use Kodachrome, black and white reversal or positive emulsions. If we elect to film with reversal footage, either black and white or color, our work ends with the actual shooting, and the processing laboratory does the rest. If we use positive film, we must employ a commercial laboratory to develop it for us or we must set up our darkroom.

This is not so involved as one might think, because positive film may be developed at home, without special ability or equipment, if we deal only with short lengths, which are adequate for titles. This emulsion is the least expensive of all, yet it has, for the title maker who works at home, a most serviceable property, because it provides reversed black and white values in the finished caption. By virtue of this, black lettering on a white card appears, on the screen, as white lettering on a black background. Lettering in black ink, on white cards, is much easier than using white ink on black cards; white letters on an otherwise dark screen are more legible and more comfortable to our eyes than is a glaring white surface, brilliantly lighted, in the midst of which a huddle of black letters is only partially visible.

For longer title wordings, more film is required. In determining the length of your titles, a practical expedient will be helpful. When you are ready to film a caption, press the button, and, while the camera is still running, read the title aloud twice; when you have completed the second reading, stop the camera.

This will insure ample footage, whether the title is brief or lengthy. If you are in doubt, shoot the maximum footage that you may need, because you always can shorten this, in editing.

*Special effects with titles*

Title backgrounds and the letters themselves may be filmed in motion. If you make use of the simple tricks that were discussed in Chapter VI, you can introduce a variety of illusions. The first of these tricks is performed by stopping the camera, by modifying the scene and by starting the camera again. The second trick employs reverse motion. These devices will serve 16mm. filmers, but the second is not available to 8mm. camera users, without elaborate methods which are not discussed here, but which will be explained to members of the Amateur Cinema League, on request. Film of 8mm. width, when it is ready for projection, has only one line of perforations. In reverse motion effects, 8mm. film is not only spliced end for end; it must also be turned over on its longer axis, and this operation will force the audience to read all titles backward on the screen.

With the first of these simple tricks, characters may be added to, or taken away from, the title card, so that legends may appear on the screen and depart, letter by letter.

Reverse motion in titling will permit a scrambled heap of alphabetic characters to range themselves into a caption or it will bring a title out of flame. Letters can appear to fly from the nowhere into the here, to form desired phrases.

Using these methods of titling demands, first, a clear understanding of the principles of these two magical effects, as they have been set forth earlier in this book, and, second, a willingness to experiment with different devices for employing them.

Moving backgrounds add interest to titles. To film them, we can apply the title wording to a glass of suitable size, which is placed between the camera and the scene that will be filmed. The lens is focused on the background, and the shot begins. While the camera continues to run, the focus of the lens is shifted, so that the background will become indistinct and the title wording will come into clear vision. After enough footage has been recorded, to permit the title to be read comfortably, the focus is again shifted to the back-

ground, so that the title will be blurred, as it was at the beginning of the scene. This method is also serviceable with static backgrounds, if one prefers to eliminate action. The general appearance of this titling effect is like that of a dissolve, in the projected picture. It is possible only for those movie makers who have a focusing lens at their disposal.

The camera may also move, to create an effective title. In this procedure, letters are laid on the ground, where they are filmed, after which the camera tilts smoothly upward to reveal the scene that follows. Title wordings may be placed on blank leaves of books, by lettering, by printing or by using gummed characters. A hand turns a page, to reveal the title and, again, to remove it. This device is very effective in films of historical regions.

Titles may be revealed by a wipeoff, which has previously been described. The lettered card is momentarily covered by a sheet of dull, black cardboard, which is drawn aside, at any desired speed, to show the legend. The title may be obscured by reversing the process. Title cards may be lowered in filming, to show the appropriate scenes that follow, but focus must be changed quickly, to avoid indistinct footage in the action which the title precedes.

The more elaborate cameras, already described, will produce still more complex titles. These special effects will be discussed later, in this book.

Our movie, that we have edited and titled, with so much satisfaction in the absorbing and challenging processes of these important phases of filming, is now ready to go on the projector.

## CHAPTER XII

## PROJECTION

ALTHOUGH a movie may be a great success, as a production, an audience will judge it by the presentation on the screen. If pictures are out of focus, if their corners are obscured by dust which has gathered in the gate of the projector and if the showing is interrupted several times by broken splices, your guests will have a poor impression of your capacity as a movie maker, no matter how carefully you planned and recorded the film that has just been projected.

Therefore, the presentation is very important. Its success will depend, to a great degree, upon what you do *before your guests arrive.*

### *Arranging the room*

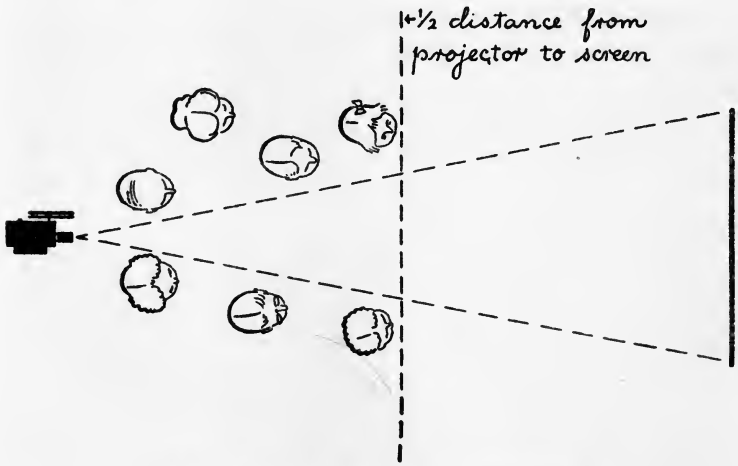
The screen should be placed in the room, so that the entire audience may have an unobstructed view of it, but it should not be raised so high that your guests will have to crane their necks, to see the picture. The most satisfactory arrangement is to stagger the seats and to place the screen, so that its lower area is on a level with the eyes of the seated guests. If this is done, nobody will block another's view, and everybody can enjoy the projection in comfort.

The precise arrangement of projector, seats and screen depends upon the shape of the room and the location of its furniture. It may be advisable to move some of the things in the room, in advance of the showing, to provide generous

space for the guests. If the party is small, this may not be necessary.

Because the brilliance of the picture on the screen is diminished, if it is seen from an angle, the best seating plan would place the whole audience directly in line with the screen. Those who sit out of this direct line will see less well. This ideal cannot always be reached.

A path must be reserved for the beam of light coming from the projector and passing through the center of the best seating space. A guest will be very uncomfortable, if he has been placed so that he must twist himself to one side, to avoid obstructing the shaft of light that carries the picture to the screen. The diagram shows a good arrangement of audience, projector and screen.




**The audience must not sit too near the screen.**

Some hosts place the first row of guests too close to the screen. This should not be done, because everybody in the audience should be able to see the whole picture, without turning his head from side to side. We have all learned the

discomfort of this position, from having gone forward too far, in motion picture theatres.

The minimum distance from the screen to the nearest chairs should be one half of the total distance from the screen to the projector. This rule applies when the regular lens is used on a 16mm. projector or when the usual lens is employed on an 8mm. machine. When a lens of greater focal length (a term that is discussed in Chapter XV) is employed for projection in an auditorium, the first line of seats may be placed nearer.

The comfort of your audience is the principal purpose of these precautions, because you want your guests to enjoy your movie party, just as you would want them to take pleasure in any other entertainment that you might give them.

*Preparing the films*

Select the films to be shown, place them on a rewind and inspect them carefully. Look for broken splices or imperfect splices that have loosened. By holding the edges of the film in your fingers, as you wind it slowly, you can detect tears or breaks. If you have added the titles just before the presentation, check them, to assure yourself that they have been spliced into the film correctly.

After you have rectified any faults that may be found, rewind the film, so that it will be ready for projection; while you rewind it, clean it, by passing it between the folds of a soft, lintless cloth.

Make sure that film containers are correctly marked and that they are arranged in the order in which you will project the reels that they hold. Then, as you change reels, you need not fumble in the dark.

*The projector*

Turn your attention, next, to the projector. The first precaution is to clean the gate, by pulling a soft cloth through it, back and forth, several times. Then, using a camel's hair brush, remove lint that may have been left by the cloth.

If your projector has a still picture attachment, set the lever at "still picture" and throw the switch, to operate the motor and to turn on the lamp. Doing this will illuminate the aperture, so that you may see any dust, remaining after your cleaning, and it will set the projector's fan in motion, to blow lint away.

Remove the lens and brush the edges of the aperture, to remove dust. Clean the surfaces of the lens with lens tissue or with a soft, well laundered handkerchief. Follow the instruction manual, in cleaning reflectors and condenser lenses.

After you have cleaned the projector, oil it, if necessary, following the manufacturer's instructions, and then thread into the mechanism the leader of the first reel of film that is to be screened. If the projector has a knob that may be turned by hand, to discover if the perforations have been engaged properly over the sprockets, revolve this several times, to make sure that your threading is correct. Be sure that the end of the film is attached securely to the takeup reel. It is most embarrassing to find, during the showing, that the projected footage has piled up on the floor at your feet!

Now, after throwing the switches to start the motor and to turn on the lamp, engage the clutch (if your projector has one), to operate the mechanism. While the machine is running, center the picture on the screen and adjust the distance between projector and screen, so that the image exactly fills the latter's white area. It should not "spill over."

While the machine is running, focus the lens, to make the image sharp. This should not be done while the mechanism is set for still picture projection, because heat from the lamp may cause film to buckle slightly, in the gate; the resultant focus will differ from that which should obtain when the machine is in operation.

After the image has been centered on the screen and the focus has been adjusted, reverse the mechanism and return the film to the starting point—the first frame of the main

title. Then, disengage the clutch, turn off light and motor and set the switch for normal projection.

Now you are ready for your guests. Later, when the room is darkened, turn on the motor and, after it, the projector lamp and, finally, engage the clutch. The show is on! The picture that flashes on the screen is in perfect focus, and there will be no interruptions until you stop, to change reels.

Projector lamps will give longer service, if you take care of them. If your projector has a variable resistance (a device for changing the amount of electric current that is admitted to the lamp), turn this to its lowest point, before you start the projection. Then, with the machine running, raise the illumination gradually to the desired intensity.

Do not operate the projector so slowly that the picture will flicker, because doing this will shorten the lamp's life; moreover, it will create an unpleasant effect for the audience. When a projector is operated too slowly, the fan, which cools the lamp, also runs too slowly, with the result that the lamp will be overheated. To approximate the normal projection rate of sixteen frames a second, you should first operate the motor slowly and, then, gradually increase its speed, until no flicker is evident in the projected picture.

*Shall we talk?*

The question of what to do while your movies are projected is a delicate one. You will inevitably be tempted to "explain" the picture to the audience. Of course, since the "theatre" is your own home and the audience is made up of your guests, you will not want to adopt the impersonal attitude of a theatrical projectionist. On the other hand, if you offer a running commentary of casual observations, such as "Now, you will see the Grand Canyon—I moved the camera there slightly—wait a minute—I forgot—that isn't the Grand Canyon—it's Bryce Canyon," your audience cannot enjoy the movie, however good it may be.

The well planned silent film should need no explanations; if you wrote your titles, so that you carefully avoided "tipping off" your audience to what it will see next, you should not commit that very fault in casual conversation. Let your pictures speak for themselves. You will naturally answer questions that may be asked by anybody who is particularly interested in something that you have not explained fully, in titles.

*Other films*

Your own films may be sufficiently varied and interesting, to make up a well balanced evening's program. If they are not, take advantage of the diversified offerings of film libraries. You may buy some of these, for use from time to time, or you may prefer to rent them for an occasion. An extensive assortment of silent and sound 16mm. films and of 8mm. silent subjects is available, among them dramas, "shorts," current newsreels of important events, cartoons and "comics." Industrial and publicity pictures may be borrowed without fee. Even if you have enough material of your own, you can, by adding a commercial movie to the program, give your guests better entertainment.

*Formal showings*

A formal movie showing, at a club, church or school, involves more careful planning. For these occasions, a projector that will accommodate reels of larger capacity is desirable, so that the presentation may take place without interruption, although two projectors might be used alternately. While one machine is running, you can thread the mechanism of the second and make it ready to continue the projection, when the reel in the first has been shown. With practice, you can change from one projector to another, without interrupting the continuity of the screen images. As soon as the last scene of the first reel nears its end, the motor of the second projector is started. The lamp of the first projector is switched

off, at the instant in which the lamp of the second projector is turned on.

The auditorium in which the films will be screened should be inspected, well in advance of the actual presentation. Investigate the electric current supply, to determine, beyond question, whether it is alternating or direct. If your projector has a switch that is marked for both kinds of current, this should be set to agree with the type that is supplied to the hall where your films will be shown. If your machine is not designed for use with the electric current that is delivered to the auditorium, a suitable projector must be secured.

Locate the electrical outlet that is to be used for your projection and determine whether you have a cable, long enough to reach from it to the projector, when this is placed in position, for screening.

What must be the distance from projector to screen? It may be necessary to place the projector so far away that, if it is shown with a regular projection lens, the picture will be too large for the screen. You can meet this difficulty with a lens of greater focal length (a term that is discussed in Chapter XV) or you may be able to move the projector or the screen.

A screen that is permanently installed in public auditoriums may be dusty, spotted and yellowed by age, or its surface may be cracked. It is advisable to use a screen, specially secured for the occasion, to avoid the disappointment and anger that you will feel, if the brilliance of your most beautiful shots is dimmed by a yellow screen of "magic lantern" vintage.

You will, as a matter of course, go carefully over the projector and the films that will be screened in it. Take every precaution, for it is most embarrassing to be the *maestro* of a movie program that "fizzled."

Carry an extra projection lamp and a pair of gloves, for use, if you have to remove a lamp that had burned out, during the screening. The bulb, to be replaced, will be too hot to touch immediately, without some protection for your hands. Movie

makers who give frequent programs outside their own homes carry extra projection lamps, lengths of electric cord, "two way" electric plugs and gloves, in a kit, housed in the projector case.

If you are asked to project in the daytime, assure yourself in advance that some adequate means have been provided to exclude sunlight. Those who have no experience with movies do not realize the extent to which a small ray of extraneous light may dim the brilliance of a projected picture, and they are likely to be optimistic about the possibility of darkening the room sufficiently, for good movie projection.

*Screens*

As we learned in Chapter III, screens with beaded, matte white and silver surfaces are available. Different housings and supports are also offered. Some screens are rolled into a box which is opened for projection; the screen is pulled up and is held erect by rear supports; the box may be set upon a table or a shelf.

Other screens have tripods that eliminate the need for a detached support. They also may be rolled, when they are not in use (the tripod support being collapsible), so that the whole unit is compact and portable. Some of the roller screens are so designed that they may be attached to a wall, as well as supported on a table.

The size of the screen that you will use most frequently will depend upon the power of the lamp that you habitually employ in the projector and upon the size of the room in which most of your movies will be shown. The average screen for 16mm. projection at home varies from eighteen by twenty four inches to thirty six by forty eight inches in size.

*Your own theatre*

Some movie makers fit out a basement or an attic as a little movie theatre. A projection booth, equipped with glass covered portholes, is built at one end of the room and a screen is

installed permanently at the other end. The screen can be covered by a curtain that is drawn open for projection. A rheostat may be provided for the room lights, so that they may be dimmed gradually, as in a commercial theatre. A proscenium can be built around the screen, and colored lights may be provided for its arch. One may go as far as he wishes, in emulating the mechanics of the movie theatre. If any special wiring is installed, this should be done by a competent workman.

Your projector, as well as your camera, is a mechanism of precision. It deserves careful treatment and an occasional overhauling at the factory where it was built. Summer is a good season for this periodical examination, the cost of which is slight.

*Caring for film*

Storing film, either black and white or full color, presents no special difficulties in the average home. The one essential precaution is to refrain from keeping your reels close to a steam radiator, steam pipe, stove, chimney or other heat producer. Heat or extremely dry air causes the moisture, present in films, to evaporate, and, if this evaporation continues for some time, film may become brittle. Hence, the best storage place in the average home is a shelf near the floor of an unheated closet.

It has been found that the optimum in storage conditions calls for a temperature of approximately fifty degrees, Fahrenheit, and a humidity of about fifty percent. These conditions represent the ideal, and a reasonable deviation from them does not cause the slightest damage to film.

It is not necessary to humidify film, unless it has been subjected to extreme dryness or unless it has been projected continuously for a fairly long time. If film has dried until it has become brittle, this condition can be rectified, by placing the film and a small square of damp blotting paper within an

airtight container. In twenty four hours, the film will again be pliable.

Do not permit water to come in contact with film, because it softens emulsion; this softening will cause the coils of film in a reel to adhere. In humidifying, one must be sure that the damp blotting paper does not touch the film itself. Kodachrome is especially sensitive to damage from excessive dampness.

Films present about the same storage problems that we encounter in dealing with books. The chief requirement is to protect them from dust and from excessive dryness or dampness. The ordinary, metal film can serves excellently, as a permanent container. Various types of cabinets and portable boxes, for storing and carrying film reels, may be purchased. Steel storage cabinets may also be built to order.

One need not fear that, in the course of years, his films will shrink or stretch to an extent that will prevent projection. Careful tests have shown that maximum changes in film length do not exceed the tolerance of projectors that are commercially available.

Recent tests, conducted by the United States Bureau of Standards, have shown that cellulose acetate, the material that is used in making what is commonly known as "safety film," upon which all 16mm. and 8mm. movies are recorded, is a remarkably stable composition. Therefore, this film is widely used by museums and libraries, in which photographic and cinematographic records are preserved.

Although movie film is a stable composition and although a carefully handled reel may be projected more than five hundred times without showing signs of wear*, it is always possible that valuable footage may be scratched, through mishandling or by allowing the projector to accumulate emulsion which hardens. This is film's worst enemy. Keeping

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*Practicing movie makers have reported that they have projected both black and white and color films as often, without noticeable ill effect.

projection equipment in order and cleaning it frequently will prevent this kind of damage.

When you rewind film, do not tighten the coils, by holding the reel in one hand and pulling the loose end of the ribbon with the other. This practice, known as "cinching," causes the coils to rub against each other, so that, if the smallest grains of dust are present, the emulsion will inevitably be scratched.

If an original black and white or full color film is especially valuable, one may preserve it from danger of mishaps during projection, by having it duplicated. The duplicate footage is used for ordinary projection, while the original reel is preserved carefully and is used, only, if a duplicate is not available. Any number of duplicates may be made, which will be of excellent quality. Full color pictures may be duplicated either in color or in black and white.

Special treatments designed to preserve film, and to aid in protecting it against wear, are offered to movie makers. Certain of these minimize the danger of film damage.

*Sound accompaniment*

Movies are sometimes more entertaining, if they are accompanied by suitable music, which can be provided, by playing phonograph records during the screening. An ordinary phonograph may be used for the purpose, but a smoother presentation is possible with a dual turntable assembly which was developed for this use.

This assembly consists of two turntables upon which records are played, each of which is equipped with a "pickup" and a "volume control." The electrical pickups are connected to an "amplifier" and a "loud speaker," which may be those of a household radio or which may be found in a special unit, to be placed on the floor below the screen.

The "dual turntable" is so designed that one may change from the music of one record to that of another, without interruption in the continuity of the sound. It is also possible to play two records at the same time. For example, while one

record provides soft "background music," another might be played on the second turntable, to produce suitable "sound effects" that would match the action of the picture.

The records and the dual turntable unit are generally placed beside the projector, so that one can operate both mechanisms at once. Some persons are so adept at fitting music and appropriate sound effects to the picture and at manipulating records, that the final result is very like a "sound on film" movie.

There is a great variety of phonograph records from which you can effect a combination of music and movie, to suit your own taste. The procedure, in planning a musical "score" for a movie, is, first, to review the film and to determine the general mood or emotion that is produced by each of its sections. For example, a movie of a journey from city to country might be divided into these sections which are based upon the moods that they evoke: (1) introductory sequences —*excitement, city atmosphere;* (2) country fair—*gay, light;* (3) farm and scenic shots—*peaceful, pastoral.*

When this division has been made, it is not difficult to find recorded music, to fit each mood. Frequent changes of music should be avoided, because of the difficulty of manipulating numerous records. It is best to change records while a title is on the screen, because the caption usually indicates a shift in mood. We diminish the volume of music from the first record, when the title appears on the screen, and, as the sound dies away, the volume of the second record is increased, to reach the desired level, as the title ends and the next scene appears.

Every imaginable sound is recorded on standard phonograph discs. Such widely differing noises as "freight train passing," "coffee percolating," "man walking on gravel road," "steamboat whistle—continuous" are catalogued for use with corresponding movie scenes. They are widely sold and they are inexpensive. Skill and practice are, of course, requisite for a successful use of these interesting adjuncts of projection.

In addition to musical and sound accompaniments, a narration, or commentary, can be given vocally. The operator may

speak into a microphone that is connected with the assembly or he may have his remarks recorded on a disc which can be played on one of the turntables. There are studios where records of narration may be made at very reasonable cost. Using a recorded commentary is generally preferable to speaking into a microphone.

It is possible to make one's own records of voice, music or sound effects, on discs, by employing recorders that are available. These devices look very much like electrically operated phonographs, and they are not difficult to use. One speaks or plays into a microphone, and a record is automatically produced on a disc. The discs are made of a special material; they are inexpensive; they can be "played back" immediately on the recorder itself, on any double turntable or on phonographs that employ discs. The recorders are compact and easily portable, and they may be set up anywhere. A special model is available, by means of which large records can be made, so that a single disc can serve to accompany an entire 400 foot reel.

## CHAPTER XIII

## FILMING INDOORS

INDOOR movie making offers us the special advantage of filming at leisure. We can set up a tripod carefully, without the interruptions that we may encounter out of doors; we can plan scenes and viewpoints comfortably.

Our whole house is a potential movie studio, and the incidents of our daily life make fascinating subjects. Nor is it difficult to take pictures indoors, for fast film, fast lenses and the "flood bulb" have banished the need of powerful or numerous lighting units and heavy cables. Today, one can make movies inside his home as freely as he makes them out of doors. You need not clutter a room with equipment, to take pictures in it.

Lenses of high speed, with apertures as large as *f*/1.9, are available for both 8mm. and 16mm. cameras. Others, even faster, with speeds of *f*/1.8, *f*/1.5 or *f*/1.4 are also offered. Fast black and white film is spooled for both 8mm. and 16mm. cameras, although, at present, the most sensitive of all emulsions is limited to the 16mm. width.

### *Flood bulbs*

The invention of flood bulbs has been a factor, as important as fast lenses and fast film, in simplifying indoor movie making. These electric lamps, which look like ordinary frosted household bulbs, burn with high intensity, generating a very great amount of light from the relatively small quantity of current which they consume. But the life of the inexpensive

flood bulbs is only a few hours, so most filmers burn them at full intensity, only when the camera is operated.

Flood bulbs of three sizes are commonly used by movie makers. The first, known as No. 1, gives illumination that is approximately equal to that of an ordinary lamp, rated at 750 watts; the second, or No. 2, is twice as powerful as No. 1, and the third, the No. 4, produces light that is four times as strong as that of No. 1. No. 1 and No. 2 have the familiar screw bases that fit standard household sockets, while No. 4 has a "mogul base" which fits only the large sockets that are specially designed for that purpose.

There are two varieties of flood bulbs. The type that is most commonly used emits light which is richer in red rays than is daylight; the other type employs blue tinted glass which gives to its illumination a color that is practically the same as that of daylight. Either type may be used with black and white film. The particular advantage of the blue tinted lamp is found in the fact that, when regular Kodachrome is exposed by its light, the special filter, which would be needed with white flood bulbs, is not required.

Some flood bulbs incorporate their own reflecting surfaces, which are provided by adding a silver finish to the bowl shaped part of the lamps. They give the same results that would be obtained from ordinary flood bulbs, employed with small, highly polished reflectors.

*Lighting indoor scenes*

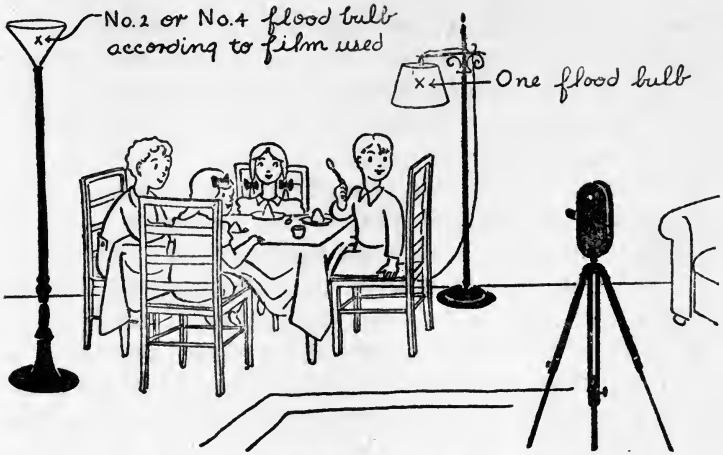
With the fast lenses and the extra fast black and white film at our disposal today, we can make a satisfactory movie shot in a room that is well lighted by ordinary household lamps. It is not imperative that we increase this normal illumination, to get a passable scene. However, the best pictures are not made with just a minimum of lighting, and, since it is so easy to obtain plenty of it, by the use of flood bulbs, there is no reason why one should hamper himself by meager illumination.

Flood bulbs may be screwed into overhead electrical fixtures, wall brackets and domestic lighting units, such as floor, table and desk lamps. Shades may be removed from floor and table lamps, if they are outside the lens field, to illuminate the scene. A shaded lamp, within the scene, also may be used as a light source; if this is done, the ordinary bulb is replaced by a flood bulb and the lamp is put in such a position that its light will be cast on the subject. Three No. 1, or two No. 2, unshaded flood bulbs will produce adequate illumination for a home movie scene that is to be filmed with an *f*/3.5 lens or with one that is faster, and with moderately fast film. The illustrations show several of the numerous lighting arrangements that are possible in the average home.

A high light from the table lamp is well supplemented by general indirect illumination.

**Good general illumination can be helped by using a natural lighting source.**

**A simple plan which will produce a natural lighting effect.**




Indirect light is especially good for filming children, as it will not cause them to squint.

Strong side lighting, produced by daylight, needs to be supplemented by flood bulbs.

One of the simplest and most effective movie lighting plans is carried out, by directing the rays of a powerful lamp toward a white or light colored ceiling. The ceiling reflects a soft, diffused illumination over the whole room; this is an excellent light for movie making.

It is easy to obtain this type of lighting, by using a floor lamp that is designed to give indirect illumination and by replacing the ordinary bulb in the lamp's reflector with a No. 4 flood bulb. An indirect floor lamp is usually fitted with the mogul socket that is required by this larger light source. If a lamp of this kind is not available, almost any reflecting unit, that can be turned upward, may be used. Special lighting assemblies are offered commercially that will meet this need very efficiently.

The process of lighting a movie scene well does not stop with providing enough illumination to get good exposures. If we want to produce really interesting and beautiful scenes, we must control the direction and the intensity of the light.

In the discussion of outdoor filming, we learned that, if the illumination came from behind the camera, flat lighting was produced, which makes uninteresting black and white shots. But we also found that, if the greater part of the light came from one side of the camera, shadows were cast, to model the subject and to create a far more attractive picture.

These principles hold true indoors, but we have the added advantage of being able to control the placement of the lamps. Out of doors, we were limited to shifting the camera viewpoint, with reference to the direction of the sun's rays, but, now, we can either shift the viewpoint or move the lights.

Furthermore, indoors, we can, and usually do, use more than one source of illumination; with the additional lights, we can create effects that are far more subtle than those which we can get out of doors.

*Side lighting*

We may give overall illumination to a scene by the methods that have just been described and we may then produce the

effect of side lighting, by placing another lamp at one side of the subject. The same scene may be back lighted, by placing still another lamp, so that its rays will fall on the rear of the subject.

A widely used lighting arrangement is obtained, by placing lamps, as they are shown in Figure 1, on page 196. Two light sources are used, one of which is placed on one side of the subject, and the second, on the other. Both lights are turned toward the subject at an angle of about forty five degrees.

One light source is made stronger than the other, to avoid the flatness of balanced illumination. To increase the relative strength of the light on one side of the subject, we can: (1) move one lamp closer to the subject; (2) place a more powerful lamp on one side of the subject; (3) place two lamps on one side and one lamp on the other.

This generally serviceable method of using two light sources that are placed at forty five degree angles, with reference to the subject, and of making one of these stronger than the other always produces excellent results. The stronger light, on one side, casts shadows that give the subject form and depth in our two dimensional pictures, while the weaker light, on the other side, decreases these shadows, so that they will not be too dark and so that they will show more details.

There are numerous variations of this basic method of lighting a movie scene. For example, the weaker light source, on one side, might be replaced by a reflector which would throw illumination back to the shadow side; also, the scene might be given sufficient general light, from overhead flood bulbs, and the effect of unbalanced illumination and the desired shadows might be obtained from a single lamp, placed at one side of the subject. Here, there is enough overall illumination to lighten the shadows on the other side.

A third variant of our basic scheme provides general illumination, by any convenient means, and casts a high light on one side of the subject, by placing near it a shaded table lamp

or floor lamp, into which a flood bulb has been inserted. The effect that is created is pleasant and natural, because the high light comes obviously from the familiar light source that the audience sees in the picture.

*Back lighting*

After he has arranged lamps, to throw more light on one side of the subject than on the other, in order to get the benefit of side lighting, a movie maker can further improve his scene by illumination behind the subject. This is shown in Figure 2.

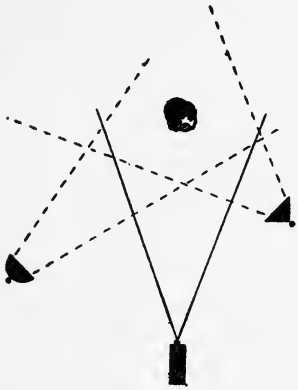


Figure 1. The simplest arrangement for satisfactory lighting.

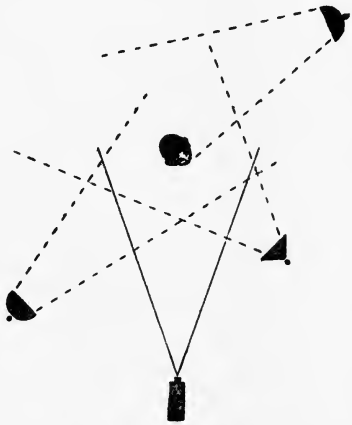


Figure 2. A logical placement of a third light.

This back lighting gives the scene an illusion of depth. Because of the different planes of illumination, the subject seems to "stand out," producing an effect which is most important, if whatever you are filming is near a wall; without some illumination from the rear, in this case, your subject may appear, in the two dimensional picture on the screen, to be in the same plane as that of the wall itself.

A further refinement in our basic plan is obtained from additional lamps, so placed that their rays will create special high lights, wherever these may be desired. Emphasis may be given to faces, in this manner.

We see, therefore, that the different steps in a simple, but very effective, plan of indoor lighting for movies are: providing sufficient overall illumination, to permit a good exposure at a middle range lens stop, such as *f*/3.5 or *f*/4.5; "building up" the picture, by adding lamps, to produce side lighting and to give depth and roundness; casting high lights on special areas or objects; and intensifying the illusion of a third dimension, with back lighting.

In black and white filming, we may combine sunlight, that enters through a window, with the light of flood bulbs. Some scenes that are made near a large window may require nothing but natural light, but a reflector should always be placed on their shadow sides. If you are using outdoor color film indoors, however, daylight and floodlight cannot be mixed unless the bulbs are of the blue-glass type. For a complete discussion of color film lighting, see Chapter XVII.

*Special lighting equipment*

Good movies can be made, by using flood bulbs in household lamps and in regular lighting fixtures and by placing the lights in proper relation to the subject, but, obviously, one cannot control the results as effectively in this way as he could, if he used lighting equipment that is specially designed for movie making.

There are special lighting units which have efficient reflectors that will direct light according to your desire; they permit you to use the full power of the flood bulb or of any other lamp.

The simplest of these special units comprises a lamp socket and a small reflector that may be clamped on a table or on a chair. This device is convenient and inexpensive; since the clamps are covered with rubber, they will not mar furniture.

Another very useful lighting aid is provided by a pair of sockets and two reflectors, which are mounted on a collapsible stand. Each socket will accommodate one No. 1 or one No. 2 flood bulb; when the lamps in both reflectors are turned on, a wealth of illumination is produced. This device can be dismantled quickly and it may be packed in a small space.

Spotlights, that employ either flood bulbs or special types of lamps, extend the range of home movie lighting. Many of these permit you to vary the area of their light beams, so that you can provide a high light of greater or smaller circumference, at will. Decreasing the area of light beams will increase their intensity.

Commercially available equipment, that is specially designed to illuminate movie scenes, is inexpensive, light in weight and compact. One need not hesitate to contemplate indoor shots that would require its use.

Since flood bulbs have a relatively limited life, if they are burned at full strength, a device, which will permit you to reduce the amount of current that is admitted to them, when the camera is not in action, is desirable. A switch, known as a "hi lo," which may be connected to the cord of the lighting unit, can be found in any electrical supply store. This switch, that will provide light of two intensities, is turned to the "low" position, while you arrange the lamps, and to the "high" position, when you start the camera.

When they are burned at full strength, No. 1 flood bulbs draw two and two tenths amperes of electricity, No. 2 bulbs draw four and four tenths amperes and No. 4 bulbs, eight and seven tenths amperes. Therefore, only six No. 1 bulbs, three No. 2 bulbs or one No. 4 bulb may be used on any one electric circuit, which is "fused" for fifteen amperes. Houses and apartments are provided with several circuits, as a rule, so that some of the lamps may burn on one of these and some on another; placing lamps in this way lessens the probability of "blowing a fuse." To replace a fuse of lower amperage with one of higher amperage is generally inadvisable; under no

circumstances should one bridge the fuse contacts with a coin or with a piece of metal.

*Placing lamps*

Lamps must be so placed that direct rays from an unshaded light will not strike the lens. Units that are equipped with reflectors can be turned away from the camera, but one must be very careful, if he uses unshaded flood bulbs.

A lamp that is so placed as to provide back lighting must be shaded to prevent its direct rays from reaching the lens. Sometimes, one can conceal a lamp behind the subject, to guard against lens flare, which has already been discussed.

Unshaded light sources should not be visible in a scene, as you observe it in the viewfinder. Shaded floor lamps and table lamps, as we have learned earlier, may become parts of an indoor movie setting, where they will give a very natural effect.

A deep lens hood serves to exclude direct rays of light from the lens, and it is especially convenient, if back lighting is employed.

When lamps are used, that have open reflectors, the intensity of the light that they cast on a subject varies with the square of the distance from the subject to the light source. Therefore, if we move a lamp only slightly, we shall have changed the illumination quite perceptibly. Hence, we can increase the effect of any particular lamp to an important degree, by moving it nearer to the subject. We must not move the lamps after we have calculated the exposure and after we have set the diaphragm of the lens. The camera may be moved forward or backward, without changing the requisite exposure, but this will be affected, if lamps are shifted.

In planning a lighting arrangement, polished surfaces in the scene should be examined carefully, to make sure that they do not contain reflections of lighting units. Varnished or waxed wood, glazed pictures and metal objects may present mirrored images of the light source. Survey the scene carefully in the

viewfinder, to discover anything that may give this undesired effect, which can readily be obviated, by moving the lamps or, perhaps, the troublesome objects.

*Artistic effects*

The experienced indoor filmer arranges his illumination, as if he were "painting" a scene with light. He knows that shadows really make the picture, for it is only by means of their shadows that objects achieve the effect of roundness and plasticity. The face of a pretty girl, for example, will be flat and uninteresting in a black and white scene, unless the illumination is so arranged that her features will be emphasized by the delicate shadows which they cast.

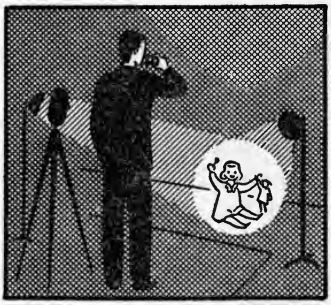
The careful movie maker knows the value of diffusing agents which are employed to soften the "hard" rays of light. One may diffuse the light of a flood bulb, which is fitted into a reflector, by the simple expedient of holding a thin white silk handkerchief in front of it. Various fabrics, such as netting or scrim, will modify the illumination, to the extent that is desired.

*Correct exposure for indoor shots*

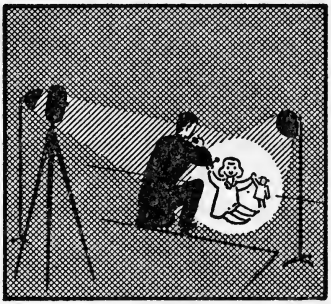
Lighting tables and exposure guides will help us to determine the correct diaphragm openings that should be used, in filming interior scenes that are illuminated artificially. From these tables, we can also determine the number of flood bulbs and the distances between them and the subject that we must employ, to produce a well exposed scene, at a given diaphragm opening. Here, the distance from a lamp to the subject has a definite effect; therefore, we must measure this distance carefully when we use interior lighting tables. If the lights should be shifted to a new position, the tables must be consulted again, and the recommended exposure for the revised distances must be used.

Exposure meters are very serviceable, in indoor filming. When a meter is employed, to determine exposures for interior

scenes, it should be held close to the subject, as we see it in the illustration. Care should be taken, to prevent the direct rays of an unshaded lamp from striking the exposure meter, because the very strong light that comes from such a lamp would produce a higher reading than the subject required.



**Wrong: Too much dark area is included in the meter's field.**



**Right: Only the illuminated area affects the meter.**

If one reads a meter as he stands near the camera, the reading may be affected by dark areas that are outside the range of the lamps.

The exposure that will be used for an interior scene which includes several items of interest should be determined from readings that are taken in the darker parts of the scene and from others that are taken in the lighter parts. These readings should be averaged, in order to obtain a generally satisfactory diaphragm setting. Sometimes you will have several persons, in the scene, who are wearing dark clothing. If you determine an exposure for this scene by the method of averaging several readings, the dark garments will influence the result too strongly, as compared to the faces; therefore, you should take a reading of one of the countenances and you should use this, even if it is incorrect for the clothing.

An exposure meter may serve us when we arrange lights for an interior scene. We shall often want to know whether the illumination provided by one lamp is stronger than that

of another, so that we may secure a desired high light or an artistically unbalanced effect. We cannot always determine this fact by inspection, but our meter will give accurate information. Again, a meter will keep us within the safe bounds of light variation in interior filming. The most brilliantly illuminated part of a scene should not give a reading that differs from that of its darkest area by more than three diaphragm stops, if the picture is to be really well exposed.

*The wide angle lens*

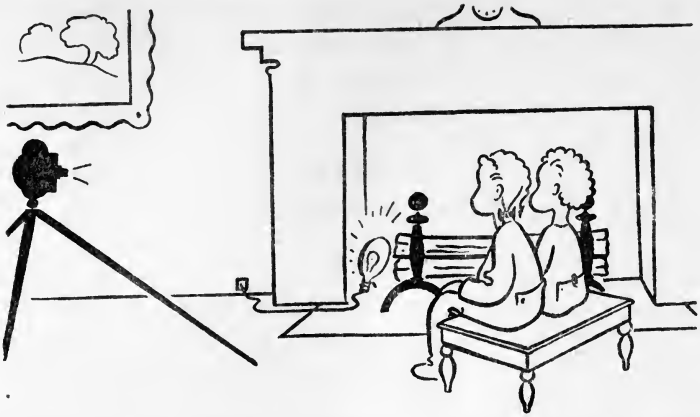
A wide angle lens, which includes a larger field than that which is afforded by the lens that is ordinarily used on a camera, facilitates a variety of indoor shots. For example, a movie maker, who is filming in a room of average size, may meet an obstruction, when he attempts to move his camera farther from the subject, in order to get a larger view of it. This obstruction may be a piece of furniture that can be moved only with difficulty or it may be a wall that cannot be moved, at all. He can solve this problem, by employing a wide angle lens; with it, he can obtain a larger view of the subject, without moving the camera farther from it.

Wide angle lenses are invaluable to a movie maker who films indoors; they are also useful in outdoor movie making.

A wide angle lens includes a larger field than that which is covered by the viewfinders of average lenses; so, one must allow for this factor, in determining the limits of a scene that will be filmed with this convenient accessory. Adjustable viewfinders, that meet the needs of this situation, are discussed in Chapter XV.

*Special lighting effects*

The effect of firelight may be produced without a fire, by placing a single flood bulb reflector unit in an empty fireplace and by arranging the principal subjects in front of it, so that only the light, and not the unit itself, may be seen. You may place the lamp in a corner of the fireplace, which should be



outside the area of the scene, or you may depend upon the subjects, to hide the lamp from the camera's view.

A silhouette can be filmed, by placing the subject in front of a light colored wall, upon which a flood of illumination has been directed. No light should be permitted to play upon the subject from the direction of the camera, because the side that faces away from the wall must be in deep shadow. The strong reflections from the brightly lighted background will illuminate the subject from the rear, with the result that it will be sharply silhouetted, in the screen picture.

The mildest mannered person of your acquaintance may acquire a truly diabolical aspect, if you will light his face from below, by means of a lamp that is placed on the floor in front of him and out of camera range.

Brilliant and fairly even lighting will give to a scene the effect of gaiety, while sombreness and gloom may be suggested by large areas of shadow.

A moonlit scene is easily simulated in color filming, by exposing indoor color film in daylight and by using a diaphragm opening that will cause a slight underexposure. A still smaller diaphragm opening will give the effect of greater darkness. Daylight that enters a room through a window can be made to look like moonlight, if it is filmed in this manner.

With the fastest black and white emulsion, many scenes can be taken at night, without strong lights. You may film a man's face by the illumination of a match, cupped in his hands, as he lights a cigarette; a flashlight will enable you to record a face in a darkened room; children can be filmed, as they play by a hearth, with no illumination except that which comes from the flames in the fireplace.

*Filming indoors in public places*

You can make movie shots of indoor sports, such as wrestling, boxing and hockey, because arenas where these are carried on are, in most instances, sufficiently lighted to insure good results, if fast black and white film is used. The only difficulty that we encounter is that of finding the correct exposure. A meter reading that is taken from a seat in the audience will not serve, because it will be affected by the large dark area that surrounds the brilliantly illuminated space where the action takes place. One must take the meter closer, so that its field will include only the well lighted area. The difficulty arises from the fact that we cannot always take the meter closer, with the result that we must frequently omit this reading and depend upon our judgment alone.

Theatrical performances and brightly lighted spectacles in night clubs may be filmed in black and white or in color. An exposure of approximately *f*/1.9 for indoor color film usually gives excellent results. If the performers are illuminated by a number of powerful spotlights, less exposure may be required.

Indoor swimming pools, gymnasiums and field houses are generally too poorly lighted to permit the use of any film except the fastest black and white emulsion. If you want to insure perfect exposures in these places, your best guide is an actual test.

*Filming outdoor night scenes*

By using black and white or color film, you can get footage

of theatre marquees, electric signs, lighted shop windows and brilliantly illuminated metropolitan areas, when you film at night. The best time to make these shots is at dusk, just after the lights have appeared. Then there is still enough daylight to illuminate some of the areas in the scene that, later, would be recorded as completely black.

For color shots of electric signs, use indoor color film and open the diaphragm to a stop of about $f/1.9$, if you want brilliant results. A much smaller opening should be used for the fastest black and white film, which is so sensitive that you can get good footage with it, even in such places as restaurants and shops, if these are brightly lighted by normal illumination.

Night scenes in the woods may be filmed, by lighting a magnesium flare, which will illuminate a circle with a radius of about fifteen feet; in this area, one can record the action with black and white film or with indoor color film.

*Some indoor themes*

Of all indoor filming occasions, Christmas is probably the most popular. And it is deservedly so, because its atmosphere of excitement and color provides excellent opportunities for pictures.

You may use scenes about town, that show preparations for Christmas, as an introduction. Shop windows bulge with gifts. Children's faces press eagerly against the panes. Santa Clauses and Salvation Army lassies are active at every corner and the streets are bright with wreaths and colored lights. The giant community Christmas tree makes a good picture and a nice transition from these scenes of general interest to the more specific incidents of home.

Once inside our own doors, an attractive galaxy of activity invites our camera's attention. The knowing filmer will use many closeups and semi closeups, as he records the pleasant task of addressing Christmas cards and the joy of reading the greetings of others. Hands are seen, as they wrap and tie

gifts in a bright assortment of papers and ribbons. Quiet fun can be suggested, as Mother and Dad succeed, by various subterfuges, in concealing from each other the bulky packages that will appear as surprises with tomorrow's tree.

But the children of the family are the subjects of first importance in any Christmas film; so we soon turn to their eagerness and to their many activities. The proverbial letter to Santa, filmed in medium shots, semi closeups and closeups,

makes a fine sequence. The ceremony of hanging the children's stockings, enlivened, perhaps, by little Tommy's trick of exchanging his own short sock for Mother's more commodious gift receiver, is good material for our Christmas movie. In many families, the well loved songs and stories of the season form a part of the ceremony at Christmas Eve; they offer delightful opportunities for good shots that will give the atmosphere of holiday time.

On Christmas Day itself, there are two predominant subjects—the happy hullabaloo around the tree, as the gifts are opened, and the colorful feast of Christmas dinner. In filming either of them, it is well to plan for an even distribution of footage between medium shots of the whole activity and closer shots of the significant details that enliven it. Try to

capture the expressions of the children, as they pounce on their presents and reveal each new surprise. Follow these shots with brief, individual closeups of the more attractive gifts and, later, insert them ahead of the shots that show the youngsters' delight. Treat the adults in the same way, and stage, if you like, a little scene of humorous action, in which Dad gets the inevitable gaudy necktie, or Mother, a dozen handkerchiefs from each member of the family. Arrange, if need be, an interesting jumble of torn wrappings and twisted ribbons, and end your sequence with a shot of it.

At dinner, much the same procedure may be followed with good effect. There will be medium shots that show the entire setting and the arrangements of the table; semi closeups that feature each guest in turn; and a series of closeups of the well cooked bird, the bright jellies and the plum pudding, wreathed in holly and dancing blue flames.

Birthdays are popular and important occasions for indoor filming. Here, as at Christmas, the children dominate the scene. We might show Dick's tenth birthday in the following scenes.

A good beginning would present the closeup of a hand, as it writes and addresses invitations to the party. Not only will this shot suggest the subject matter that is to follow, but it will also give the important facts that reveal to the audience the date of the occasion and Dick's age. Added interest might be brought to this action, by filming the handwriting in Dick's boyish scrawl. From the first closeup, we move backward to a semi closeup that shows both Dick and Mother, as they finish the task; this sequence can end with a fade out on a scene in which Dick drops the letters into a mailbox.

The next scene, which fades in, might show the excitement and gaiety of the little guests, as they arrive. The children are filmed, entering the door; this should be done in a medium shot. Greetings are exchanged and the presents are given to Dick. The action shifts, now, to the living room, and we can show Dick opening his gifts or we can picture the games

that have been arranged for the afternoon's fun. Here, the active cameraman will try to take semi closeups and closeups of the excited youngsters.

At last, for the climax, comes the ceremony of the birthday cake, with the happy scenes around the refreshment table. In this action, the good filmer will get his finest sequences. Lighting presents no problem, if enough flood bulbs have been placed in the overhead fixtures. Nobody is embarrassed, for the children are too eager, and too intent on the cake and the ice cream, to be self conscious. In a medium shot, you can show all the guests, as they take their places. You must follow this with a closer shot, when the gleaming cake is brought in, bright with its ten candles. It is placed ceremoniously in front of young Dick.

Move very close, to film the tense moment in which he puffs his cheeks and blows out the wavering flames. Step backward, now, to take a medium shot, while the cake is cut and the plates are heaped with ice cream. The youngsters fall to! A series of semi closeups will record their delight, and the film may well end with a closeup of the crumbling remains of the once proud pastry.

There is no dearth of material for indoor filming. No filmer should fail to get a record of family weddings; if yours is the kind of clan that enjoys periodical reunions, pictures of these will serve for the years to come, when later gatherings will be reminded of the past. Does the bridge club come to your house occasionally? Filming it may disturb the serious players, but it will provide fun for the other guests.

With fast emulsions and flood bulbs, the problem of lighting is simple. Bring to your interior movies but a little forethought and a simple film plan, such as those we have just looked at, and the results will be good enough to satisfy your most critical friends.

## CHAPTER XIV

## THE CAMERA DECEIVES

JESTING Pilate asked, "What is truth?"

It would be most inconvenient, if our senses, particularly the sense of sight, told us the truth all the time, for, if our sight did not deceive us, the illusion of the motion picture itself would be impossible.

Consequently, we welcome the facility that movies offer for building up whole structures of illusion, one upon another; indeed, this very facility is a fine outlet for our creative powers.

Most cine illusions are absurdly easy to produce. The real effect of a movie trick comes from the way in which it is introduced—the preparatory ideas that precede it and the element of surprise that is involved.

### *Basic tricks*

We have already examined the basic movie tricks that are so simply performed and that are so highly effective, when we employ them in the right context. The first of these produces an interesting mystery. After careful prearrangement and with a precise understanding by the actors of what will be done, we stop the camera; but, just as we do this, everybody who is in the scene "freezes," that is, he remains absolutely motionless, to the best of his ability; we then take something out of the scene, add something to it or change the position of some object that is in it, but it must be something to which attention has been called in earlier action;

then we start the camera. The object will appear, in projection, to have moved of its own volition. This illusion proceeds from the fact that frames of film, continuously projected, will picture continuous action. The effectiveness of this trick depends upon how little the audience will realize that the motion has been interrupted; hence, the camera must be held firmly on some solid support, and everything and everybody in the scene must remain motionless throughout the two takes.

The second basic trick is that of reverse motion, by means of which the footage of the actual scene that was recorded first will, in projection, appear last. How this is accomplished with 16mm. silent film has already been explained, and we know that we have only to hold the camera upside down, as we take the picture, and to turn the footage end for end, as we edit it into the film that will be projected.

A special condition makes it difficult to follow this procedure with 8mm. film. Processed 8mm. footage is perforated on one side only, so that the film of a scene cannot be turned end for end, if its emulsion is to face in the same direction as does that of the rest of the film.

Therefore, if one wishes to shoot an 8mm. scene with the camera held upside down, he must be content to splice his "end for end" strip into place, with its emulsion facing differently. If this is done, objects will be reversed from left to right in projection; this reversal is not particularly objectionable, unless printing or writing is filmed or unless wordings appear somewhere in the scene; these would, of course, be illegible. When a shot that has been recorded on 8mm. film by reverse motion is projected, the lens of the projector must be refocused, as the scene appears on the screen, because the image has been recorded on the emulsion, which will, by reason of the special splicing, be in a different vertical plane from that of the rest of the footage.

These basic tricks can be used in simple, or in more complex, movies. Sometimes, they may be so unobtrusive that the

audience will not be aware of any illusion. For example, if your film plan calls for a realistic automobile accident, you may ask an actor to stand directly in front of a motor car, with his body curved backward and with his hands thrown wildly upward; the car is then driven *backward* rapidly, while the actor walks *backward* out of the scene, in a preoccupied manner.

If this shot is filmed with the camera held upside down, the car will appear, in the projected scene, to be rushing toward the actor, and then it will seem to strike him, as he walks into view. The illusion may be enhanced by fast motion, which can be secured, by shooting the scene at a camera speed of twelve or of eight frames a second. This shot should be followed by a closeup, that is made with the camera held upright, which will show the "victim" sinking to the ground, in front of the car. Another closeup, of the horrified driver's face, will complete the sequence.

A more familiar use of reverse motion, of which the audience will not be aware, is found in scenes in which it will appear that the camera has been placed on the front of the locomotive of a train that is traveling at high speed. In reality, the shot has been made from the observation platform at the rear of the train, but with the camera held upside down.

*A humorous illusion*

A humorous effect, which may be used in the film record of a Hallowe'en party, can easily be made. The host meets a guest and offers his gloved hand, which the visitor takes, only to find himself holding a glove that seems to cover a severed hand, while the host turns away, to reveal an ostensibly empty sleeve.

Suddenly, the host turns again to the guest and says, "Give me back my hand. I need it!" He recaptures the missing member with his other hand and places it on a table, near a box of cigars. Immediately we see the hand on the table, in a closeup; the arm in the empty sleeve approaches, and presto!

—the two are magically reunited; the gloved fingers flex themselves, and then they select a cigar.

Here are the steps that are required to film this trick. The introductory sequence, in which the guest literally "takes" his host's right hand, is filmed without interruption. The "hand" is really a stuffed glove, which is held by the host within his sleeve. As he asks the guest (in a spoken title) to return his hand, the host grasps the stuffed glove in his left hand, but his right sleeve still remains apparently empty. He moves toward the table.

The next shot is a closeup, in which we employ the trick. In this scene, the empty sleeve rests on the table, as the host bends over it. Using his left hand for the purpose, he places the stuffed glove in its natural position in the empty sleeve. The camera is then stopped. While the host remains motionless, somebody takes the stuffed glove away and carefully brings the host's right hand from the sleeve. This hand must wear a glove that is a replica of that which was stuffed, and it must be placed in the very position that was previously occupied by the stuffed glove. The camera is then started; after an instant, the fingers move, and the apparently reunited hand and arm take a cigar from the box.

*Some additional illusions*

Illusions may be created in editing. Among these is the closeup which appears to have been made when the scene was filmed, but which, actually, was "faked" later.

The actions or the incidents of two successive scenes are associated automatically in the minds of the audience. If a character is shown, in a closeup, pointing at something that is not seen by the audience, the next shot will be accepted as one that represents the thing at which he pointed. Material from entirely unrelated sources may be associated in this way.

You can, with telling effect, use footage that is taken from commercial library films. For example, two boys are shown prowling warily through the tall grass of a New Jersey meadow

that looks like the African veldt. Suddenly, one of them stops; he grips the other's arm, apparently paralyzed with fear. The next shot, which has been cut from a library "thriller," shows a very live lion rushing, full tilt, at the camera. The association is inescapable to the audience. That lion is "going for" those boys!

Another instance of trick editing is found in the familiar chase, that was so popular in the early "custard pie comedies." Up hill and down dale, through all sorts of obstacles and difficulties, go the chasers and the chased, always recorded in separate scenes. Often, these are filmed at entirely different times, for convenience or by necessity.

A successful illusion results from the employment of closeups that have been framed carefully, so that they exclude unwanted or extraneous objects from the background. By this device, one dilapidated stairway can serve for a whole haunted house. The closeup of a steer's bleached skull lying in a dried puddle will suggest a drought; in actuality, the skull was carefully prepared, and it was "planted" in a green meadow. Propaganda films often use this deceit. A prosperous village may be given an appearance of complete destitution, if one films only close views of several deserted hovels.

Remember that, in the movies, things are assumed to be what they seem and that skimmed milk can easily masquerade as cream, or vice versa. The eye cannot rove beyond the confines of the frame that you set for it; so it is incumbent upon you to select that frame carefully, with thoughtful consideration of its content, so that it will tell your story forcefully and with simplicity.

Shots that involve the unseen manipulation of objects in the scene may be considered as camera tricks. A closeup of the driver of a car can suggest its travel very effectively, if somebody shakes the body of the automobile, while the driver goes through the motions of steering it. In such a shot, of course, no stationary objects in the background should be included in the scene, but the subject may be outlined against

the sky. Sometimes, the breeze that is created by an electric fan, which has been placed outside the lens field, can be used, to give realistic motion to scenes that, without this expedient, would have none.

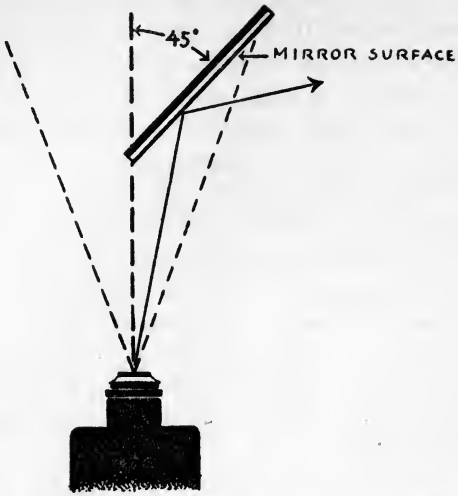
Branches of trees and other flexible objects may be bent into such a position that they will frame the subject. A branch which has been cut from an adjacent tree may be held in the foreground, to produce an ornamental effect in a corner of the frame or to cast a pleasant shadow.

Moving small objects by invisible wires or strings and filming them in reverse motion may produce serviceable tricks. If you want to show the innate "cussedness" of a golf ball, which drops into an impossible lie, you should select the goal of its perversity and place the ball in it, after you have fastened a black linen thread to the projectile with a blob of sealing wax. Holding the camera upside down, you should then film a medium shot that shows the ball, at rest, for an instant, and, afterward, its travel, as you jerk it toward the camera by the thread, which will not be recorded, because of its black color. When this shot, reversed end for end, has been spliced into your film, it will produce a humorous effect on the screen, especially if it is followed by a scene of an angry golfer's face.

Pointing the camera at angles that will exaggerate reality can emphasize certain aspects of a subject. A close upward angle usually makes a man look stronger and more rugged; hence, there is a wealth of upward angle shots of athletes. A downward angle tends to dwarf the subject; it may be used for dramatic effect, when one character in a film story intimidates another. You can tilt the camera, to give a steeper slope to a hill.

*Shooting in a mirror*

When a mirror is held close to the camera's lens, at an angle of forty five degrees to its axis, a scene will be recorded that is actually located at the right or left of the one toward




A mirror, inclined to the lens axis at forty five degrees, will give a view of a subject placed at right angles to the camera. The mirror may be so arranged that its edge bisects the lens field; this arrangement will give both reflected and direct views in the same picture.

which the camera points. If the field of the lens is split in half by the mirror, as the diagram shows, the resultant picture will contain two views, one of which shows a scene that lies straight ahead, and the other, a scene that is situated at a right angle to the first. The opaque backing of the mirror may be removed from a small area in its center; the hole that is produced will provide, on the screen, a restricted view of whatever lies straight ahead, but this will be surrounded by the scene that is reflected in the mirror.

Other scenes may be made with the aid of mirrors, which will be nothing more than ordinary views of mirrored reflections that we see everywhere in real life. In shots of this kind, the camera may be placed at any distance from the

mirror that may be necessary, to achieve the composition that has been selected. However, in these shots, if the camera is stationed at a distance from the mirror that is greater than two or three feet, a special precaution must be taken, in setting the focus for the reflected image. This special precaution is explained in the next paragraph.

A correct focus setting for the shot of an image, that has been reflected from a mirror, includes both the distance from the camera to the mirror and that from the mirror to the subject. A critical focusing device or a distance meter will give the correct focus setting for a mirrored shot automatically, but, if you determine the focus by measurement, you must add the distance between the mirror and the subject to the distance between the camera and the mirror, and you must employ the total figure.

Interesting shots may be made of images that are reflected from round polished surfaces, such as garden balls and the hub caps of automobiles. Sharpness of focus, here, depends entirely upon the curvature of the surface; hence, a critical focusing device will serve the filmer well, when he records these shots.

*Miniature settings*

Shots of miniature models are interesting; they can include many lighting effects which would be impracticable for most filmers, in full sized settings. Sometimes, shots of models can be related to scenes of life sized subjects in editing, so that, by their context, they will appear on the screen in full size. The successful construction of the models will depend upon the skill of the builder, but surprisingly realistic effects can be achieved from moss, pebbles and clay; some very realistic toys also may be purchased. Model railways and ships, some of which are replicas of their prototypes, down to the last detail, may be filmed, to produce very lifelike results.

Models are best filmed with plenty of light, so that a fairly small lens aperture may be used, in order to produce a realistic depth of field. In shooting almost any moving model,

it is advisable to use a slow motion speed of thirty two or sixty four frames a second, which will add the slightly more ponderous effect that brings verisimilitude. Closeup filming devices, which will be discussed in Chapter XV, serve to make pictures of small models.

Effects that are appropriate to certain dramatic situations may be secured, by shooting through something that will distort the picture, such as crinkled cellophane, the bottom of a milk bottle or a faceted glass button.

*Animation*

Special cameras and special attachments and accessories greatly increase the scope of cine illusions. A few cameras are equipped with single frame releases, that permit the exposure of one frame at a time. These devices are helpful, in making the scenes of animated objects or drawings, which were mentioned in Chapter VII.

One may tap the release button or lever of an ordinary camera so quickly and lightly that only one or two frames of film will be exposed at a time. Thus, with any camera, it is possible to produce animated scenes of inherently motionless objects, although the single frame release makes the operation simpler and more certain.

Simple objects are animated most easily. In a movie scene, you can cause an ink bottle to appear to travel across a desk, by exposing one frame of film, moving the bottle an inch forward on its path and then exposing a second frame. This process is continued until the bottle reaches its destination.

The greater the distance through which an object is moved between the exposure of one frame and that of the next, the faster it will seem to progress on the screen. However, if the object is moved too far between exposures, it will appear to jump from place to place, rather than to move continuously.

One can determine, in advance, how many seconds of projection time are desired for the completion of a particular movement. This number of seconds is multiplied by sixteen,

to discover the number of frames of film that are required to depict that movement.

For example, if we wanted our ink bottle to move across the desk in three seconds, we should have to make three times sixteen, or forty eight, separate exposures of single frames. Between the exposure of one frame and that of the next, the bottle would have to move one forty eighth of the distance that it is to traverse. If that distance were twenty four inches, the bottle should be moved half an inch, each time.

To produce acceptable shots of animated figures, it is necessary to place the camera on a steady support and to keep it there throughout all operations. The illumination and the diaphragm setting must not be changed, in a series of exposures of single frames, because a variation in these would produce a flicker on the screen. Since daylight varies continually, scenes of animation are best made indoors with artificial illumination.

You will find it easy to animate objects, jointed figures or lines on maps, if you will observe these precautions, although a lengthy animated shot requires both time and patience. Animation is an effective aid, in presenting graphs and charts in special purpose films. It is often used, to enliven maps that appear in travel pictures and in educational movies. A route may be indicated clearly on a map by the progressive extension of a line of dots.

The production of animated cartoons is beyond the ability of most movie makers. The preparation of the drawings that are needed requires skill in draftsmanship and vast labor. A large staff of trained workers is employed, to produce even the shortest theatrical cartoon.

*Double and multiple exposures*

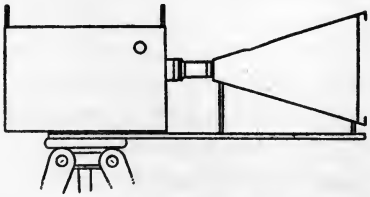
Double exposure is a movie trick that is produced, by recording two different images on the same length of film. This is accomplished, by shooting the first scene, by rewinding the film to the starting point of this scene and by filming the second scene. Some cameras, that were discussed in Chapter VII,

are equipped with devices that permit us to wind film backward.

A double exposed shot may be filmed with a camera that lacks these special attachments, but, to achieve the desired results without them, a movie maker must manipulate the camera mechanism and film by hand, and with exceeding care.

The procedure that must be used, to make double exposures, without employing a rewinding device, is made up of these steps: (1) the loaded camera is taken into a room or a closet, from which all light has been excluded, and the cover is removed; the upper edge of the film is notched with a pair of scissors, at a frame that is near the aperture; the cover is replaced; (2) the first scene is exposed, and the exact footage that has been used is noted; (3) the camera is taken again to the darkroom and the cover is removed; the film is unthreaded, and it is rewound by hand to the starting point of the first scene; (one locates the starting point, by running the film through his fingers, while he rewinds it, until he feels the notch that was made earlier); the film is threaded in the camera mechanism again and the cover is closed; (4) the second scene is filmed, and the footage meter is watched carefully, to make sure that the same length of film is reexposed that was used for the initial exposure.

By repeating this procedure, a triple exposure or a quadruple exposure may be made. Obviously, the device by means of which film can be wound backward in the camera greatly simplifies these operations.



A simple mask box.

A popular double exposure is the scene in which an individual is shown, talking to himself. This effect, which is called a "split screen," is obtained by masking one half of the frame area, while the first shot is made, and masking the other half, while the second shot is filmed. The frame area might include several different scenes, but these would require complicated masks.

Some cameras are equipped with slots that will accommodate masks; with others, it is necessary to place a mask box in front of the lens, as it is shown in the illustration.

*Tricks in titles*

Titles are especially well served by cine tricks. In fact, a setting for titles, since it is easy to illuminate and to manipulate, offers a fine opportunity for experience in creating illusions. Some titling expedients, that involve tricks, were discussed in Chapter XI, but others are given here, because of the widespread interest in this kind of filming.

Titles, in which thick wooden letters or those that have been molded from some substance are employed, may reveal interesting shadow patterns. With these letters, you should use two lamps, to illuminate the title, and you should place one of them much nearer to the subject than the other, so that the letters will cast long shadows. You may move one of the lights slowly, while you film the title; doing this will cause shadows to change form.

Title letters may be affixed to plane or curved surfaces, which may be moved in various ways. For example, the title cards that are used in a lead title assembly might be placed in the card holder in a series. After enough footage of one title has been filmed, its card drops forward, to reveal its successor.

Letters may be attached to the surface of a drum, which is so placed that it will fill the field of the lens; after the camera has been started, the drum is revolved slowly, to bring the caption into view. Letters may be affixed to one side of a square box that is suspended on a horizontal rod. The box is

revolved, so that the side that carries the title is brought squarely in front of the lens.

The lead title might be placed on one side of such a box, the credit title, on another and the introductory subtitle, on a third side. When the camera has been started, the fourth, or blank, side should be visible; the box should then be revolved, to bring the first title in front of the camera, and, after a sufficient length of film has been exposed, it should be revolved a second and a third time, to record the others.

By using the method of double exposure that has been described, a white lettered title may be superimposed upon any movie scene. The scene is recorded first; the film is then rewound, and it is exposed a second time, to record the title, which is composed of white characters that appear on a dull black background. The title should be illuminated and exposed in the ordinary way. The black title background will not be recorded, if the exposure has been correctly chosen, and the final result will be a length of film in which white letters appear over a movie scene. The area of the scene in which the title is to appear should be dark, so that the white letters will be legible.

*Time condensation*

Time condensation is a movie illusion that is somewhat like animation, for it requires that the film be exposed, frame by frame, with an interval between exposures. However, while the purpose of animation is to make things appear to move, although they are really motionless, the purpose of time condensation is to accelerate, in appearance, the motion of objects whose normal movement is so slow that the eye cannot detect it.

The commonest use of this movie device is found in picturing plant growth and tropisms. For example, a growing plant is placed on a prearranged movie stage, and one frame is exposed, at the end of each successive fifteen minute interval. When the footage that is so recorded is projected at normal

speed, the growth of the plant will appear to have been enormously quickened, and one can watch buds forming and shoots springing forth with an almost terrifying abruptness.

The camera must be placed on a firm support, and this must not be moved between exposures. The lighting and the intervals between exposures must be uniform. The camera may be operated by hand, but an automatic releasing mechanism, that one can secure for this special purpose, is much more convenient.

## CHAPTER XV

## THINGS FAR AND NEAR

WHEN one sits in the balcony of a theatre, he may have a full view of the stage, but the distance from the balcony to the stage may be so great that he cannot see clearly the expression on an actor's face. So he raises a pair of opera glasses to his eyes; through these glasses, he sees only a part of the stage, but every object in that part will appear to be much larger than it seemed to be when his eyes were unaided. Now he can see the actor's expression clearly.

The "one inch" lens that is designed for most frequent use with 16mm. cameras or the regularly employed "half inch" lens of 8mm. cameras may be compared to the unaided eyes of the spectator in the balcony; the results that are obtained from the movie lenses that we call "telephoto" are roughly analagous to those that we can get from our eyes, when they are reinforced by opera glasses.

### *Telephoto lenses*

Lenses that are commonly referred to as "telephoto" will picture a smaller area of a subject than that which will be recorded by the lens that is ordinarily employed with the camera that is used, but whatever is included in the recording will appear to be much larger, on the screen, than it would seem to be, if the average lens were employed.

If we use a telephoto lens to film a distant subject, this subject, on the screen, will be pictured as if it were closer to

the audience than it would appear to be, if the ordinary lens were used. The audience will see the moose on the screen clearly, although, in reality, when the shot is made, the camera is so far away from him that the audience might not perceive the animal, at all, if the scene were filmed with the usual lens.

When we use a telephoto lens, to film a subject that is close to the camera, the part of the subject that is shown will be greatly enlarged. Thus, a telephoto lens may be used either to bring distant objects apparently nearer or to make the subject appear to be larger. The lens operates in the same way in both cases, of course, but, ordinarily, we have only one of these purposes in mind when we employ a telephoto.

For the sake of simplicity, and following common practice, we shall apply the word, "telephoto," to any lens that pictures scenes in which the subject appears to have been closer to the camera than it actually was or scenes in which it is more greatly magnified than would have been the case, had the ordinary lens been used. Actually, there are lenses that produce these effects by means of longer barrels and others that produce them by means of special optical design. The latter are true telephotos, in the exactly scientific meaning of the term, but both are entirely effective for their purposes.

Telephoto lenses are referred to by designations in inches. Thus, we find "two inch," "three inch" and "four inch," as well as terms that contain still larger figures, used to distinguish the telephoto lenses that are employed with 16mm. cameras. The telephoto that is common to 8mm. cameras is the "one and one half inch" lens. These designations proceed from optical principles which, although they are interesting, have little practical value for the average filmer. The designation of a lens by inches is commonly called its "focal length."

The greater the focal length of a lens, the smaller is the area that it pictures, and the greater is the apparent magnification of that area on the screen. The one inch lens, that is used in 16mm. cameras, and the half inch lens, that is employed in 8mm. filming, record scenes that are comparable

to those which our unaided eyes will see. Therefore, they are known as "normal lenses." The degree of apparent magnification by a telephoto lens may be understood by comparison with a normal lens.

A two inch lens includes a scene area that is one half as wide as that which is included by a one inch lens; so it may be said to magnify the subject twice. A three inch lens includes one third of the width of the area that would be recorded by a one inch lens; so it may be said to magnify the subject three times. This progression applies to four inch and to six inch lenses, as well as to those of intermediate focal lengths.

The same relationship is found in telephotos that are designed for use with 8mm. cameras, the normal lens for which has a focal length of one half inch. Thus, a one and one half inch telephoto lens, used with an 8mm. camera, would picture scenes that are similar to those that are obtained by a three inch lens, used with a 16mm. camera.

The telephoto lenses that are most commonly employed with 16mm. cameras are those that have focal lengths of two inches, two and one half inches, three inches, four inches, four and one half inches and six inches. The one inch and the one and one half inch telephoto lenses are most frequently used with 8mm. cameras. Lenses that have been made for use with 16mm. cameras may, in some instances, be adapted for employment with certain types of 8mm. cameras.

Most telephotos are not so fast as normal lenses; this difference in speed results from the fact that it is difficult, as well as expensive, to grind lenses that have both power of magnification and great speed. Generally, the longer the focus of the telephoto, the slower it is likely to be. Yet this does not always obtain, because, for example, a four inch lens that has a rating of *f*/2.7 may be purchased. However, its cost is somewhat greater than that of a lens of the same focal length, but with a speed of *f*/4.5.

Since a telephoto lens includes a smaller field than that which is covered by the normal lens, the viewfinder that is

used with a normal lens will not be serviceable with a telephoto. Cameras are equipped with various devices which permit filmers to change the area of the viewfinder, to match the focal length of the lens that they employ.

Some cameras enable the user to observe the actual field of view through whatever lens may be placed in the taking position. By such an observation, the cameraman may determine the precise scenes that will be covered by telephotos, as well as by other lenses.

*Using telephotos*

The magnification of the subject on the screen carries with it, unfortunately, a magnification of the effect of the camera's movement. If the camera is unsteady, when a scene is filmed with a two inch lens, any trembling of the picture on the screen will be twice as pronounced as it would be, if a one inch lens were used. Similarly, a three inch lens will magnify the effect of camera movement three times.

If one's nerves are sound, he may be able to hold a camera so steady that he can produce an acceptable result with a two inch lens, but, to do this with a lens of greater focal length is impossible. With any telephoto lens, the use of a tripod is advisable; it is imperative with those whose focal lengths exceed two inches.

"Panning" and tilting the camera are ordinarily taboo, when one uses a telephoto lens. However, if you have a geared tripod head or a tripod head of the "friction" type that works very smoothly, you may be able to "pan" the camera, if this is essential in a shot that follows action, even if you use a telephoto; the results of this procedure can be satisfactory, if the operation is performed carefully. In general, the best rule to follow in filming with telephoto lenses is, *Use a tripod and don't move the camera!*

With a telephoto lens, you can secure a semi closeup from a camera position that would enable you to get nothing closer than a medium shot with a normal lens, or you can make a

medium shot from a location which, if you used a normal lens, would let you record only a semi long shot or a long shot.

Suppose that you are filming an angler who has waded into a stream and who is no longer close to the camera. You could use your normal lens, to get a medium shot of him, as he casts, and then shift the turret, to bring a telephoto lens into place, so that you could obtain a semi closeup, as he nets a fish.

A telephoto lens will enable you to get natural, unposed shots of people anywhere, for you can film them from so great a distance that they will not know that they are the objects of your attention. You can get lifelike scenes of the debaters at a street corner political meeting, of a picturesque peasant woman, offering her wares in a bazaar, or of a little boy standing, fascinated by the monkeys, at a zoo. You can turn the telephoto on the members of your own family and you can catch natural shots of them, when your subjects are unaware that they are being filmed.

With the aid of a telephoto, you can bridge distance, to bring wild animals close to your audience. You can film deer, while you are with a hunting party, or, from a blind, you can get close views of birds. Medium shots of moose, bears and mountain lions have been filmed by means of telephotos.

To picture baseball and football games or track meets adequately, you will need a telephoto lens, because, with it, from your seat in the bleachers, you can film close views of the players and of important actions. A telephoto will bring a racing yacht close, on the screen, or it will single out a shell on the river at a regatta. Telephotos are invaluable aids in depicting outdoor events of all kinds, from rodeos to Fourth of July speeches.

When a telephoto lens is used with black and white film, to record distant subjects out of doors, it is advisable to employ a yellow or a red filter.

A peculiar property of a telephoto lens is best explained by an example of its application. If, with a normal lens, one filmed a man who was running toward the camera, he would, in a

relatively short time, reach the camera's position, and his body would fill the field of the lens. However, if the subject began to run at a greater distance from the camera, and if a telephoto lens were used, more time would be required for the runner to reach a point at which his body would fill the frame of the viewfinder. This effect is useful, in filming sports.

While we can buy telephoto lenses that have standard mounts which are designed to fit most cameras, it is prudent, when we have added one of these to our equipment, to send the new lens, and the camera with which it will be used, to the manufacturer of the camera or to the maker of the lens. Either will check the lens carefully, to see that it can be seated properly. A variation of a thousandth of an inch from the proper distance between the lens's shoulder and the film's plane will affect the sharpness of the picture. But, once the lens is properly seated, you can depend upon its performance.

*Filming ultra closeups*

Little things may appear to be enormous, on a movie screen, if they have been filmed in extreme closeup. The petals of a flower may fill the picture with color, and insects may be portrayed as gigantic, antediluvian monsters.

Between only microscopically visible objects, on the one hand, and life sized movie subjects, on the other, there is a whole world of the small that offers both novelty and beauty. If you are jaded with ordinary movie making, look to the little, and you will find great variety.

Filming extreme closeups presents three problems. The first of these is raised by the difficulty that we encounter, in getting a picture, when the subject is so very close to the camera. It must be remembered that most lenses are not designed for this kind of filming.

Our second problem is the determination of the exact field that the lens will cover. In this connection, we must take into consideration the fact that viewfinders are so designed that they will not indicate the boundaries of a scene, if they are

Dr. James E. Bliss, ACL

Mildred Greene, ACL

FRAMES FROM AMATEUR MOVIE SCENES MADE INDOORS

Benjamin F. Farber, jr.

Leo Caloia

An example of a cue sheet for a musical accompaniment for an amateur movie.

Cue sheet #5 "GETTYSBURG MEMORIES" 1 Reel

| | | |
|---|---|---|
| Opening title | 1 | FIRST CALL |
| Silhouette of sentry | 2 | TENTING TONIGHT ON THE OLD CAMP GROUND |
| Fade to: modern troops | 3 | UNDER THE DOUBLE EAGLE March |
| Title "Today's soldiers-" | 4 | ACTION FRONT March |
| Artillery at gallop | 5 | FIELD ARTILLERY March |
| Title "Bitter memories are forgotten----." | 6 | JOHN BROWN'S BODY |
| Title "The lovely setting of the Gettysburg hills-." | 7 | LIEBESTRAUM |
| Trees against sunset | 8 | ANGELUS (save second side to use as #16) |

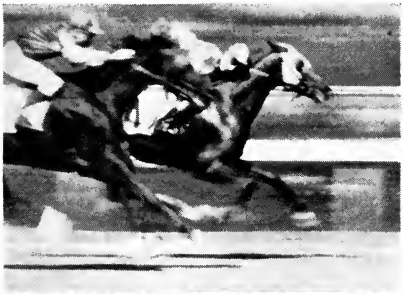
David E. Kirkpatrick, ACL

A. M. Zinner, ACL

Close shots of flowers from amateur films

Hamilton H. Jones, ACL

Frances Christeson, ACL, and Harry V. Merrick, ACL



Frames from amateur made movies of sports. At the right, the camera was "panned," to follow the racing horses —a legitimate use of the panorama. Note the reaction shot which was inserted between scenes of the race.

W. W. Champion, ACL

employed at distances that are less than those which are marked on the focusing scales of the lenses with which they are used. The focusing scales of most lenses are not calibrated for the small distances that extreme closeups necessitate.

The last problem is that of securing a sharp focus on objects that are very close to the camera. It is obvious that, if the focusing scales of lenses are not marked for very short distances, they will not serve us, in focusing upon anything within such distances.

The simplest accessory that enables us to obtain a picture of a subject, when that subject is very close to the camera, is the supplementary lens, or portrait attachment, that has been referred to several times previously, in this book. This device may be placed in front of any regularly employed lens, whether it be normal or telephoto. Its use will insure satisfactory pictures, when these are taken in extreme closeups.

Another way to get pictures, when we attempt to film extreme closeups, is to place a washer, or shim, under the shoulder of the lens, when it has been brought into the taking position. This method, which is applicable only to cameras that have the screw type of lens mount, is limited by the relatively short distance that a lens may be unscrewed, and yet remain firmly seated.

Still another method of getting pictures of small objects involves the use of extension tubes which are placed between the camera and the lens. Assorted extension tubes, that are designed to be used with certain cameras, are available.

Since the effect of opening the aperture of a lens is changed, if extension tubes are employed with it, this changed effect must be considered, in filming with these expedients. The manufacturers of extension tubes offer tables with them, which show the actual effect upon exposure that the use of the tubes will produce. One may purchase a small calculator which will show the effective aperture that should be used with various combinations of tubes.

Some telephoto lenses have been so constructed that they

may be focused at distances that are much smaller than the shortest of those that are marked on their focusing scales. These provide a further means of producing extreme closeups.

Our two remaining problems that must be solved, in order to film extreme closeups—determining the lens field and securing sharp focus—involve the employment of devices that are, in general, designed to accomplish both determination of the field and sharpness of focus, although some of them perform only one of these functions.

For example, some cameras are equipped with a viewer that employs ground glass upon which the image of the subject will be reflected. One observes this image and moves the focusing ring, until a sharp focus has been obtained. Some viewers do not show the entire scene; those that do provide this important facility are said to give "full field reflex focusing," by means of which one may observe the image that will be recorded. With a viewer of this type, one may determine the lens field and also secure sharp focus.

When only a portion of the image that will be recorded is visible in a viewer, additional means must be provided, to determine the lens field. Some cameras permit us to see the full field of the scene that the viewer includes, so that we may focus sharply, but an alignment device must be employed additionally, if it is essential that this field shall be the same as that which the lens will record.

A device that enables us to determine the field and to secure sharp focus may be purchased for use with magazine loading cameras. Another accessory, that is available for use with some cameras that have the screw type of lens mount, will show the exact field of the lens that is used, but it will not serve for focusing; a variant of this device will accomplish both purposes.

*Using small titlers in filming closeups*

One commonly used movie accessory, which is at the disposal of both 16mm. and 8mm. filmers, will solve all three of

the problems of ultra closeup recording, but its use is limited by a fixed distance from the lens to the subject and by an inflexible degree of magnification. This device is the small titler that was discussed in Chapter XI.

A typical small titler is made up of a supplementary lens, an easel and a support which maintains the camera, the supplementary lens and the easel in proper, and invariable, relation to each other. The guide frame of the easel determines the field for extreme closeups. We can place a flower or any small object in the area that is bounded by this frame, and we can then film an ultra closeup of it, with complete certainty that whatever is within the frame will be recorded satisfactorily and in sharp focus. The small titler will not serve us, if we want to magnify greatly a small object, such as an ant or a minute crystal, because the area that is recorded will always be that of the actual easel frame, no more and no less.

Altogether, there is a wide variety of equipment that is designed to help us to film extreme closeups. In planning to use any of the devices that may be secured, we must always remember the three problems of this kind of filming, to be sure that adequate equipment is at hand, to solve all of them.

When the subject is very close to the camera, the depth of field of the lens is limited. The image may lose sharp focus, if the subject is moved only a few inches nearer to the camera or farther from it. In extremely close shots of minute objects, a variation of the fraction of an inch will cause a loss of sharpness.

The smaller the diaphragm opening, the greater is the depth of field of a lens; therefore, liberal illumination is of real advantage, in recording extreme closeups. Indoors, it is easy to concentrate enough light on the little subject; out of doors, it may be possible to use a mirror or a small reflector, to throw light upon it.

The small depth of field that is available, in filming ultra closeups, may be an advantage, when we work with some subjects. When a flower, for example, is in sharp focus, its back-

ground may be a soft blur, which will cause the flower to stand out more strongly. A black velvet background may be used behind flowers that are filmed in ultra closeup.

These shots are superlatively beautiful, if they are filmed in color. Pick a fresh blossom that is covered with morning dew; if there is no dew, an atomizer, filled with water, will supply the deficiency. Attach the stem of the flower to a support that rests below the lens field; this support will hold the flower steady and in place, after you have arranged it in the field. Hang a piece of black velvet just behind the blossom, and then film the ultra closeup in full color. The result of this effort will bring sincere praise from your audience.

Even more beautiful shots may be made, if the flower is back lighted, because it will then appear to glow with its own inner light.

With a small titler, you can film sea anemones and other forms of marine life that are to be found in the shallow pools that are left in rocky formations on a beach, when the tide has gone out. Place the easel of the titler under the water, to frame the subject, but take care that the camera is not dampened. After the scene is made, the titler should be dried immediately; after a period of underwater filming of this type, it is necessary to coat the titler with some heavy oil, so that it will not rust.

The possibilities of filming minute objects do not end with the opportunities that are offered by extreme closeups. Even smaller subjects may be filmed with a microscope and with special equipment. Complete facilities are offered for this kind of movie making.

If you are fond of experiment, you may care to make an assembly that will enable you to record movies through a microscope. The Amateur Cinema League will send information to its members concerning this interesting field of adventure.

## CHAPTER XVI

## BETTER METHODS OF EXPRESSION

ALTHOUGH we have learned how to make acceptable movies, we should become further acquainted with methods and devices that will give us opportunities for more adequate expression in our filming.

We have seen the need for transitions—expedients by which we move from one sequence to another—and it is obvious that a variety of these will add suavity to our pictures. Not every transition is accomplished by an intermediate shot; there are methods of securing these scene shifts that are the peculiar property of the motion picture. The swiftest variation in the action of a film is achieved through the cut, which simply ends one scene and permits the next to follow it without hesitation. The wipeoff is less abrupt than the cut, but it is more brusque than the dissolve. The fade is a more definitive pause than the dissolve, while the title gives us the most positive of all transitions, because it stops the action completely. All these devices have been described, and the last has been discussed in detail in earlier chapters. Some of the other transitions merit fuller examination.

### *Fades*

The fade was described in Chapter VII. A none too smooth production of this serviceable effect can be secured with the simplest camera and with no accessory. Closing the diaphragm opening to its smallest circumference or opening it to the extent which the ultimate exposure requires will achieve a fade

out or a fade in. In ending the first and in commencing the second, a hand must be placed over the lens, to bring complete blackness to the screen. Obviously, unless this is done very smoothly, the result will be too abrupt. This method of securing fades is really effective only, if the scene from which or toward which the fade proceeds is one that calls for a fairly large diaphragm opening, so that there can be enough variation of the diaphragm, to emphasize the change in screen illumination.

A passable fade may be produced, by passing a card gradually across the lens and directly in front of it. This must be done very smoothly, if the result is to be satisfactory.

A "fading glass" operates more successfully. This is a rectangular strip of glass, about eight inches long, which is transparent at one end and opaque at the other, with gradual variations from light to shade between the two extremities. The glass is moved across the lens, to achieve the fade. It must never be taken away from its position, in front of the lens, until the camera stops. If a fade out is desired, the scene in which it will be employed should be commenced with the transparent portion of the fading glass in front of the lens; similarly, for a fade in, the camera should be started with the opaque portion of the glass in position. A temporary fading glass can be improvised, by smoking a clear glass over a candle flame. Fading devices are sometimes made in the shape of discs that have graduated variations in their light transmitting capacity. A fourth method of making fades involves the use of polarizing screens that are set in a frame which is equipped with a control lever.

Some cameras are provided with fading devices which are integral parts of the mechanism. These are generally called "dissolving shutters," although they are more exactly "fading shutters." They have movable blades which will open or close while the camera is running. The rate of this action is controlled by a lever which is located on the camera's exterior.

Fades may be effected in finished film, after it has been re-

turned by a processing laboratory. A dye may be applied to it, which will stain it much or little, depending upon the time of application. By this method, the strip of film upon which you wish to produce the fade is weighted at one end and is dipped into a long, narrow tube which contains the dye, where it is allowed to remain for an instant. It is then drawn from the tube with a gradual and steady motion. The weighted end, which should remain longest in the dye, will be most fully stained, and the density of the dye on the rest of the film will vary gradually from end to end.

Fades may be produced in the course of processing, if the picture has been recorded on a negative and if prints will be made for projection. The negative image can be darkened or lightened, to produce the fade, by the application of special chemicals. Also the printing machine may be manipulated, to produce a fade on the print itself. Many laboratories are disinclined to perform these operations, because of the special attention that they require.

A fade out produces an effective pause in the flow of the film story. It is most frequently used, to end a sequence or to conclude an entire film. The combination of the fading out of one scene and the fading in of another is a transitional device that indicates a lapse of time or space, or of both.

In a sequence of Christmas Eve, we can fade out on a scene of little Tommy, already asleep in his bed; if we then fade in on a shot of him, as he wakes in daylight, we shall have spanned the time between Christmas Eve and Christmas morning. If we fade out as Tommy says goodbye, when he leaves to go to a summer camp, and then fade in on a shot of his arrival there, we can bridge a gap in both time and space. We can indicate a long lapse in time, and any desired change in location, by a slow fade out that shows Tommy, now of high school age, walking hand in hand with a girl, which would be followed by a slow fade in on a scene of his marriage.

The fade out brings a feeling of finality, peacefulness and quiet, by its marked deceleration. But this feeling will vary

with the speed of the fade. If the gap in time or in space is comparatively slight (Christmas Eve to Christmas Day), it may be shown by a fairly rapid fade out and fade in. The fading would extend from eight to fifteen frames of film, and an image of full intensity would give way, gradually, to a completely darkened screen. If the transition is to be more pronounced (Tom leaves home and reaches camp) or if finality is to be indicated, slow fades would be used, which would cover ten to twenty frames. For still more special effects—such as the classic Chaplin ending, that shows the sad, but unsubdued, little tramp walking off into the distance—an extremely slow fade might be used, which could extend over forty to eighty frames.

Fades are also used in title footage. Main title assemblies may fade in at moderate speed and their credit titles or forewords may fade out. Subtitles may be faded in and faded out; if this treatment is used, the fades should be fairly rapid. According to professional standards, a fast fade of title footage will extend from thirty to forty frames; a slow fade will cover forty to sixty frames.

An inventive movie maker will find ways of devising action, to give the effect of fades. A character may walk toward the camera, until he obscures the lens field; a door may swing across the view; a car may be driven over the camera, which rests on the pavement; a blanket, a card or a newspaper may move toward the lens, the field of which it finally cuts off.

*Dissolves*

Dissolves were explained in Chapter VII. A method of winding film backward, without the use of a special device, was described in Chapter XIV, in a consideration of double exposure. Dissolves are actually two overlapping fades, one of which is a fade out and the other, a fade in, but both are made at the same speed and on the same length of film. To achieve them, we must produce fades and must employ the additional expedient of winding film backward.

While a dissolve effects a transition, it does so without the deceleration that is caused by fades. Indeed, a dissolve seems actually to speed the pace of a film, because it achieves the transition more smoothly. Fades bring one series of actions to a definite end and mark the beginning of another. The dissolve, on the other hand, suggests that we are leaving one incident and are going on to a second, which has a direct relation to the first.

The dissolve has two principal functions; (1) to bridge, without deceleration, a gap in time or in space, or in both of these; (2) to suggest a direct temporal connection between two sequences. As an example of the first function, one could employ a dissolve between brief scenes that would show Mother feeding the baby, washing dishes and cleaning the house, if it were desired to indicate swiftly that hers was a busy morning. Again, if a not too great feeling of interruption were wanted, one might use a dissolve—instead of fades—between the scene of Tom waving goodbye, as he leaves home, and that of the youngster greeting his companions, on his arrival at camp. Because of the deceleration of the fades, the change in locale and in activity acquires importance and finality—one era ends; another begins. Because of the smoothness of the dissolve, the change has less importance, and the unbroken continuity of Tom's existence is suggested.

The second function of the dissolve is the connection of parallel action, that interesting device of the movie that we have met earlier. We may dissolve from scenes of Mother washing dishes to several that show the children playing in the yard, and finally to a shot of the mischievous dog in the living room. Here, says this treatment, are three different actions, in three different localities, and yet all take place at the same time.

Less closely knit would be such examples as a dissolve from a shot of a swindler guzzling champagne to a view of his victims emptying their last bottle of milk; from the scene of a "gangster" dying by a "G-Man's" bullet to the shot of a news-

boy crying his death; from a view of the elector marking his ballot to one of the elected taking his oath of office. In each instance, the relationship of one action to another is so immediate and direct that the interruption of a fade would be inappropriate.

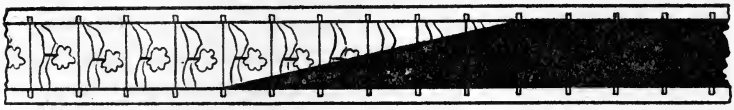
The effect of the dissolve is determined by the speed with which it is executed. In the dramatic treatment of the "gangster's" death, one should employ a relatively fast transition, extending from ten to fifteen frames. In the brief scenes of Mother's busy morning, the tempo would be less nervous, and the dissolves should include from fifteen to thirty frames. To show the sordid tragedy of the swindler and his starving victims, the dissolve should be slowed still further, to run from thirty to fifty frames. A dissolve from a main title to a credit title should be relatively slow.

To attain great suavity, dissolves may be made between objects of similar physical form or aspect. Thus, the swindler's champagne bottle becomes the empty milk bottle of his dupes and Tom's gesture of farewell merges into his wave of greeting. Even the scene of the slain "gangster" might be treated in this way, and the "G-Man" could draw a white shroud over the dead criminal, which would dissolve into the white surface of the newspaper.

The effect of dissolves can be secured without special equipment. A closeup of a round, white door knob can be followed by another that shows a billiard ball. One actor may walk toward the camera, until he obscures the view; another can walk away from the lens, in another locale. A shot of a steamer's wake can give way to one that shows a similar pattern of tossing water behind a speed boat. There is also what is known—horribly enough—as the "swish pan," in which the camera swings suddenly away from one object, across a path of completely blurred images, to come to rest upon a second. One may tilt the camera skyward at the end of one scene and bring it down to earth again at the beginning of another.

*Wipeoffs*

A wipeoff, which was discussed in Chapter VII, where the special device that is used to effect it was mentioned, may be simulated by other methods. We may affix a long, triangular piece of waterproofed tape to the length of film on which we wish to produce the wipeoff, in the manner that is shown in the diagram.

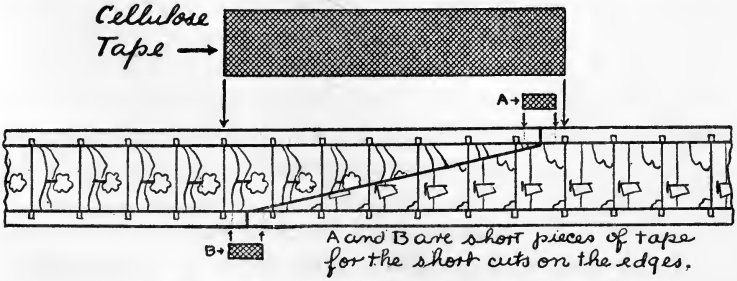


**Black dye is used, to obliterate the scene, in this type of wipeoff.**

The partially covered length of film should then be dipped in black dye; after the dye has dried, the tape should be removed. In the length of film that has been treated in this way, a larger portion of each succeeding frame will be opaque, and the last frame will be completely blackened. When this scene is projected, it will appear to slide off the screen.

A similar effect may be obtained, by applying a black cellulose tape to the film, although the permanent adhesive qualities of this medium are problematical.

In these wipeoffs, the scenes will, on the screen, appear to slide out of view, but they will not be replaced by others that




**A section of transparent tape is used, to bind together two diagonally cut film strips.**

appear to slide into the picture. If this additional result is desired, one may treat two film lengths, in the way that is shown in the diagram. These are placed side by side and they are backed by transparent cellulose tape. The tape may not serve indefinitely, as its strength may diminish in use. This double wipeoff can be made permanent, if the footage that is held together by the tape is duplicated. Also, if the effect has been secured with negative film, the resultant prints will record the wipeoffs.

The wipeoff provides a rapid transition between brief scenes of similar suggestion and import. Suppose that we want to imply that the United States is a vast country, to which fast transportation is vital. We can do this by scenes, separated by wipeoffs, that show giant buses, speeding trains and droning airplanes. Wipeoffs are advantageously employed in a series of short scenes; they should always be used sparingly and with discretion.

*Trucking shots*

A "trucking shot" is made, by moving the camera toward the subject, or away from it, while a scene is filmed. The chief requirement for producing this effect is some means of keeping the camera steady, while it moves forward or backward.

Small vehicles, equipped with rubber tired wheels, may be used, to support the camera and to provide smooth movement. A tea wagon, a baby carriage or a child's cart can serve, but the surface over which these are drawn must be smooth.

Small supports, which are equipped with wheels or casters and which will receive the legs of tripods, are available. The camera is placed upon the tripod, and this is mounted on the mobile frame. A smooth floor is essential, in using these devices.

A camera dolly may be built by using rubber tired wheels that have ball bearings. These mobile camera supports give the best results, if they are drawn over a smooth wooden track, which has been laid especially for the purpose.

Although they are not widely used in amateur films, trucking shots may serve them well. Their most direct application is found in following a moving subject. The bank robbers have escaped in their car, but the police are hot on the trail, in another, and they fire at the bandits, as the two machines rush over the highway. The camera, in a third automobile, gets alternate shots of the pursuers and the pursued. This sequence will present the running battle very realistically.

The trucking shot lets us move from the general to the particular. The heroine has been told to beware of a man who wears a black pearl. As she comes into a crowded room, her glance roves over the guests; she stops suddenly, while the camera trucks relentlessly to a closeup of her fiancé's brother, whose cravat reveals a black pearl. Not only does the advancing movement of the camera parallel the action of the heroine's eyes, but the unbroken flow of the film creates a mood of inevitable menace, far more potently than would a straight cut.

A contrasting employment of the trucking shot occurs in transitions from the particular to the general. In dim lighting, we see a hand wiping blood from a knife. Slowly, the camera recedes, to show, first, who holds the knife, second, the limp figure of a murdered man and, third, the half hidden face of a woman in a corner, who is an unseen witness to the crime. By the uninterrupted course of these successive revelations, the dramatic impact of the murder's discovery is heightened.

### *Montage*

"Montage" is a French word that, in movie making, has come to mean a special form of editing. In its use, a number of very short and individually different scenes are spliced together, to represent one general idea. These scenes are very brief, since it is only their surface symbolism that is important, and not their detailed content. A girl who lives in a small town wins a "beauty contest," and soon she is known everywhere. The notoriety that she achieves could be suggested by

a montage which would show a series of shots of (1) her departure from home; (2) the advancing wheels of a train; (3) the blinding flash bulbs of news photographers; (4) a cocktail party; (5) a swarm of autograph hunters; (6) trembling hands that sign a movie contract.

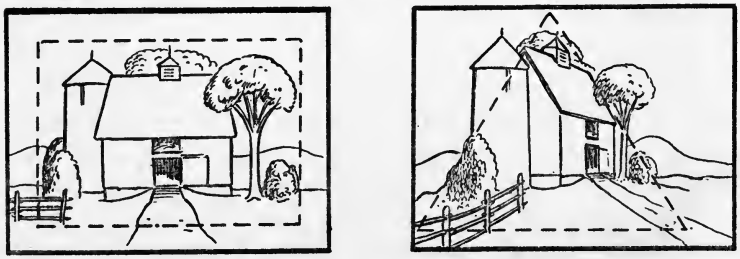
These various methods of better expression must be used with care and discretion. Each has its own purpose and its own place in movies. But imprecise employment and too frequent repetition will cause even the simplest of them to obscure the clarity of the film.

*Composition*

As we progress in movie making, our scenes will be better composed and, hence, more beautiful. We shall come, eventually, to an almost automatic selection of camera positions that will give us pleasing compositions.

Objects should be included in the foreground of our scenes and we should frame views with branches of trees and with arches. If we film at the beach, we should not forget the patterns of ripples that the wind has formed in the sands. We might film a group of fishing boats through the strands of a wide meshed net or we might picture a building through a pattern of elm leaves. Both man and nature have provided attractive details, some of which may serve for the foreground of our films, while others may fill the scene entirely.

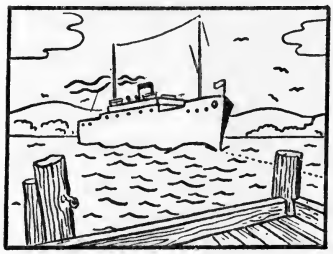
A triangular arrangement of masses generally gives an interesting composition, as we can see in the accompanying picture.



**By selecting the proper viewpoint, you can obtain a pleasant triangular arrangement of masses.**

One can, with relative ease, obtain this triangular arrangement from the stationary masses in the background of a scene, but one cannot always control moving persons or things. But, if this can possibly be contrived, it is an excellent plan to select a camera viewpoint that will produce a diagonal line of motion on the screen, because this direction of action is more pleasing than one that goes straight across the field of the lens.

For example, if you film a railway train, you can point the camera, so that the train will move diagonally or in a curve across the lens field. When you are dealing with subjects whom you can control, you should so direct your actors that they will not walk across the scene, at right angles to the camera.



Point your camera so that moving objects will pass diagonally through the lens field.

If your subjects are pictured sitting down, you can achieve a triangular composition, either by an arrangement of the persons who are in the scene or by placing them in relation to objects that are in the view. An actual shifting of properties and individuals can usually be obviated by a different camera position.

Sublety in composition may be achieved by planes in the view, that have different degrees of illumination. A scene that has a light foreground, a dark middle ground and a light background will be livelier than one that is equally illuminated in all its planes. It will also have an illusion of greater depth.

Planes of contrasting colors, in Kodachrome movies, will

give interesting effects in composition. Objects in the foreground will add to the beauty of a scene, if they are in definite contrast to the dominant tone of the middle area.

Not every one of these better methods of expression will be used in every better film, but we should always remember that they are special devices which are available for use in turning what might, otherwise, be a "bald and unconvincing narrative" into a picture that has greater interest and charm than it would possess, if they were not employed.

## CHAPTER XVII

## MOVIES IN COLOR

THE use of color film by amateur movie makers has now become so general that it is safe to say black and white emulsions are now used only by necessity—economic or otherwise.

Fortunately, it is *easier* to make effective movies with color film than with black and white, even though everyone knows that exposures must be accurate to within one half stop. The eye-filling beauty of full color completes the picture and releases the camera operator from the need to seek accented lighting effects as he must do when shooting in monochrome. Although brilliant highlights and velvety shadows may be put to work in color filming also, still it is safe for a movie maker to employ general flat lighting without risking monotony. This is because the constant change in color patterns diverts the attention of an audience to such an extent that the unimaginative lighting schemes will go unnoticed.

It is, indeed, easy to create effective movie scenes in color, but there may be times when unsatisfactory results are obtained. These generally are due to the more obvious causes of failure—underexposure or overexposure—which can soon be corrected. Of prime importance is a basic understanding of the color material you have to work with and its characteristics under all photographic conditions. Let us examine these materials.

*Types of movie film available*

The amateur movie maker has available to him two brands of color film which he may purchase for use in his camera:

A. Kodachrome, manufactured by the Eastman Kodak Company, Rochester 4, N. Y.

B. Ansco Color, manufactured by Ansco, Binghamton, N. Y.

In these brands, the following film sizes are made:

A. Kodachrome, in both 8mm. and 16mm. widths.

B. Ansco Color, in both 8mm. and 16mm. widths.

In the widths indicated, there are two types of color film offered by each manufacturer:

A. Outdoor film, known as Daylight Type in both of the brands.

B. Indoor film, known as Type A Kodachrome, or as Tungsten Type Ansco Color.

There are these two types of film (outdoor and indoor) because of differences in the color qualities of outdoor and indoor (artificial) light. These differences are expressed technically in degrees of color temperature (° Kelvin), a matter into which there is little value for the amateur to inquire deeply. We shall refer to color temperature ratings only in so far as they will serve to clarify other needed data.

The indoor films are readily converted to outdoor (daylight) use by means of a suitable filter, and the modified speed of the film will then be the same as that of regular daylight type film. The daylight type film may be used with artificial light if a suitable filter is used, but the film speed is then reduced so much that it is unwise to use daylight film with artificial light unless absolutely necessary. For certain effects, such as lap dissolve from an outdoor to an indoor scene, such use of daylight film is unavoidable. But it is only in extreme cases that it is feasible to employ it, because of the slow speed.

*Interchangeability of the two brands*

The physical characteristics of Kodachrome and Ansco

Color—such as width, perforations, thickness of film, etc. —are sufficiently alike so that the two films may be spliced together and projected interchangeably. Aesthetically, however, some differences may be noticed which will make this practice inadvisable. It is wholly a matter of personal taste and decision.

*Characteristics of Kodachrome film*

Daylight Type. This film is balanced for exposure in sunlight, plus skylight. It produces its best color rendering in bright or hazy sunlight during the period between two hours after sunrise and two hours before sunset. At other times, sunlight is not recommended for making pictures of people, although the warm, orange cast in the sun's rays may be very desirable in, for example, a landscape or a seascape.

For bluish daylight conditions, and scenes taken in shade under a clear blue sky, or on an overcast day, and also to reduce bluishness in distant scenes, a Kodak Skylight Filter is recommended with no increase in exposure. Color rendering becomes warmer with the Kodak CC14 Filter (¼ to ½ stop exposure increase), or still warmer with Kodak CC15 Filter (½ to ¾ stop exposure increase).

EXPOSURE INDEX

| Daylight | Tungsten |
|---|---|
| ASA-10 | ASA-4* |
| W-8 | W-3* |
| GE-12 | GE-5* |

* With Kodachrome filter for Photoflood.

Type A for artificial light. This film is balanced for exposure with Photoflood lamps (3400° K) by means of which the best color rendering will be obtained. 3200° K lights (professional type) may be used if a Kodak CC4 Filter is in place on the lens.

Type A film can be used with daylight most satisfactorily if a Kodachrome Type A filter for daylight is in place on the

lens. Since this filter excludes ultraviolet, no haze filter is necessary. However, because with some subjects and especially under overcast conditions this combination does not produce as good color rendering as does Daylight Kodachrome, it is not recommended for general use. Also, the Kodachrome Type A filter is only moderately stable and may fade if in sunlight too long.

EXPOSURE INDEX

| Tungsten | Daylight |
|---|---|
| ASA-16 | ASA-10* |
| W-12 | W-8* |
| GE-20 | GE-12* |

* With Kodachrome Type A filter for daylight.

*Characteristics of Ansco Color film*

Daylight type. This film has approximately the same color balance as does Kodachrome Daylight Type. Thus, the data given for Kodachrome will apply to Ansco Color, daylight type. It is pointed out to users of Ansco Color daylight type that the film is balanced for mean noon sunlight (5400° K), but the film range is 5000 to 6000° K.

For those light conditions which, with Kodachrome, call for a sky filter, the Ansco Color UV-16 filter is recommended. Use of the filter will help to maintain the same excellent color rendition present in pictures made in bright sunlight. The Ansco Color UV-17 and UV-18 filters give still warmer tones.

EXPOSURE INDEX

| Daylight | Tungsten |
|---|---|
| ASA-10 | ASA-3* |
| W-8 | W-2.5* |
| GE-12 | GE-4* |

* With No. 10 conversion filter and 3200° K lamps, not Photofloods.

Tungsten type. This film is balanced for use with any

artificial illuminants which closely correspond to a color temperature of 3200° K. A recommended lamp for good results is the PS-25 500 watt lamp which is approximately equal in candlepower to a No. 2 flood lamp. Slight changes in the color temperature of the lamp used to illuminate a scene will affect the color rendition, and so with flood lamps such as the Photoflood and the Superflood (3400° K), a UV-15 filter should be in place on the lens.

EXPOSURE INDEX

| Tungsten | Daylight |
|---|---|
| ASA-12 | ASA-10* |
| W-10 | W-8* |
| GE-16 | GE-12* |

* With Ansco Color conversion filter No. 11.

*Exposing color film*

There is but one accurate exposure for color film at which a scene and the colors therein will be reproduced correctly. But film manufacturers agree that there is a certain latitude in the film which permits an error up to one half stop variation from the normal exposure without sacrifice in quality. This means that a filmer will adopt some means of gauging or estimating the correct exposure or his results are likely to be disappointing.

Overexposure causes the colors and the picture details to appear diluted and washed out, whereas underexposure will make the scene look as if it had been photographed through smoked glasses. On the other hand, if the sky chart (the instructions which come with the film) is followed, or if an exposure meter is used correctly in arriving at the exposure, then the scene will be reproduced so as to accent and enhance all of the colors and details within the angle of view of the lens.

Most cameramen agree that, when filming in direct sunlight, use of the directions which come with the film is the

most dependable way of estimating exposure. However, this involves a certain amount of thinking, for the light and subject matter conditions must be estimated and these conditions interpreted into an exposure by reference to the data chart. For this reason, an exposure meter is often bought with the camera. All of those available today are dependable if used correctly. But they, too, require study and close adherence to instructions, as will be discussed in detail later.

*Using the instructions which come with color film*

Daylight type color film is balanced for sunlight *plus skylight.* Scenes illuminated by sunlight are in addition partly lighted by reflections from other objects, such as grass, trees, rocks, walls and the like. But there is also present, if the blue sky or clouded sky is visible from subject viewpoint, a considerable amount of skylight. These added sources of illumination bolster the shadow side of objects in the scene, thus tending to decrease contrast in the lighting. Otherwise a scene would be made up of harsh highlights and inky shadows, and color photography would suffer greatly thereby.

In following the instructions which come with the film (daylight type) outdoors in the daytime, the scene must be appraised from two separate standpoints. First of all, weather conditions are considered. There are five categories: (1) clear, direct sunlight; (2) hazy sun (when soft shadows are cast); (3) open shade (with clear blue sky); (4) cloudy bright (no shadows cast), and (5) cloudy dull (threatening).

With the exception of No. 3 (open shade with clear blue sky), these five categories are easily understood and need no explanation. By "open shade with clear blue sky" there are meant the conditions encountered in an area shaded by the side of a house. Persons pictured in closeup under these conditions will not squint their eyes, and the movie shots take on a candid, off-guard appearance.

However, to use the diaphragm stops indicated in the instructions, there must be visible from subject viewpoint an

expanse of clear blue sky from the zenith almost down to the horizon in all visible directions as one stands with his back to the house. If there is any doubt about this, it will be better to take a reading with an exposure meter, rather than to go by the instruction sheet. Also, when filming under these conditions, a haze filter is needed to prevent a bluish look in the finished movies.

Pictures made in direct sunlight require no haze filter; but on overcast days (No. 4—cloudy bright) one is recommended, especially if such footage is to be included with shots made in direct sunshine. It is generally agreed that color movies made on an overcast day with the proper filter in place on the lens are very pleasing to the eye. Lighting contrasts are soft and, to the eye, colors take on a pastel shade. In the finished movie, however, the colors are vivid and the picture sharp. And, for an obscure reason, this combination also imparts a stereoscopic quality or illusion of depth to the projected image.

Movies filmed in direct sunlight are most effective when lighted by mid-morning or mid-afternoon sunlight. When the sun is directly overhead it casts heavy, unattractive shadows, especially in closeups of persons in which eye sockets and areas under the nose and chin will suffer. On the other hand, color pictures made during the recommended period make possible general front lighting. This is desirable not only because it is an effective type of lighting, but also because it reduces exposure problems to a minimum. With the sunlight reaching the scene from the general direction of the camera, shadows will be almost invisible from the camera viewpoint. To achieve this lighting, a cameraman faces his subjects toward the sun, then takes the picture with the sun behind and slightly to one side of the camera.

Taking Bright Sunlight as a standard, the recommended changes in exposure for the different weather categories are as follows:

Bright sunlight. See exposure recommendations in the table which follows.

Hazy sunlight. Requires one stop more exposure than bright sunlight.

Cloudy bright. Requires two full stops more than bright sunlight.

Open shade. Requires about three full stops more than bright sunlight.

Cloudy dull. Requires three full stops more than bright sunlight.

Other variations from the norm are:

Side lighted subjects in bright sunlight require one half stop more than front lighted subjects.

Back lighted subjects in bright sunlight. If a rim-lighted or halo effect is desired, give one full stop more than for front sunlighting. If details in the shaded area must stand out, give two full stops more under the same conditions.

*Types of picture subjects*

The second category into which scenes fall concerns itself with the objects in a particular scene. Generally speaking, all subject matter may be classed as either light-colored, dark-colored or, if it is in-between, as average. The color or tone of the principal objects in a scene (those which must be reproduced faithfully on the screen) will influence the exposure greatly. Average subjects will require a particular diaphragm stop, whereas if the subjects are light-colored, one half stop *less* exposure will be correct. Conversely, if the subjects are dark-colored, one half stop *more* exposure should be given.

For this reason a filmer will familiarize himself with the color or tone of standard scenes so that he can readily classify them when he is using the instructions packed with the film.

For example:

Average subjects. Light and dark objects combined in

equal proportions, all being given the benefit of the same general illumination. Also, objects whose tone or color is roughly in between light and dark.

Light-colored subjects. Beach and snow scenes, light-colored flowers, people in white clothing, light-colored buildings, closeups of fair-skinned persons and all other subjects light in tone.

Dark-colored subjects. Dark foliage, deep-colored flowers, dark animals, dark-colored buildings and similar subjects.

It is by combining these two categories—light conditions and types of subject matter—that the following exposure table is worked out for Daylight type color film.

### Recommended Exposures

| | | |
|---|---|---|
| Direct sunlight | Average subjects | f/8 |
| | Light subjects | between f/8 and f/11 |
| | Dark subjects | between f/5.6 and f/8 |
| Hazy sun | Average subjects | f/5.6 |
| | Light subjects | between f/5.6 and f/8 |
| | Dark subjects | between f/4 and f/5.6 |
| Open shade, clear sky | Average subjects | f/2.8 |
| | Light subjects | between f/2.8 and f/4 |
| | Dark subjects | between f/1.9 and f/2.8 |
| Cloudy bright | Average subjects | f/4 |
| | Light subjects | between f/4 and f/5.6 |
| | Dark subjects | between f/2.8 and f/4 |
| Cloudy dull | Average subjects | f/2.8 |
| | Light subjects | between f/2.8 and f/4 |
| | Dark subjects | between f/1.9 and f/2.8 |

The above exposures, which should be followed for both close and distant views, are for front lighting. They will also

be affected in each case by the compensation for side or back lighting already mentioned. When in doubt as to whether a subject is light or dark, the average exposure should be given. The guide is intended for use in both temperate and tropical zones.

*Using a reflected light type exposure meter*

A reflected light type exposure meter is one which measures the light reflected from the subject. To do this, a reading is made by pointing the meter directly at the subject.

Complete instructions for using the meter are supplied with each instrument, of course. In practice, however, it would seem as if some new users meet with indifferent success when using the meter for the first time. This is probably due to the fact that the instructions are not truly followed. But whatever the cause, many meter owners adopt a simple formula which serves them—such as taking a reading of the palm or back of the hand, reading the subject's face, etc. Another system is to take a reading of the lightest and the darkest objects in a scene and then to use a stop halfway between those indicated by the two readings.

If any one of these systems returns you consistently good exposures, there is no reason why you should not follow it. However, for those cameramen who desire to understand the true functioning of a reflected light meter, there are a number of further considerations which are of great interest.

Reflected light exposure meters are calibrated in such a way as to give correct exposure readings for medium-toned (average) subjects. It is recommended, for that reason, that a "gray card reading" be made at the subject position. A gray card is a piece of gray cardboard, usually about 8 by 10 inches in size, which reflects approximately 18 percent of the light which illuminates it. The meter is held close to it so that rays of light from no other object affect it, and the reading thus made will indicate the correct exposure for average subjects.

If the subject is light-colored, the lens diaphragm is then closed down one half stop. If the subject is dark-colored, the diaphragm is opened up one half stop.

Now, let us suppose that the meter is pointed at a light-colored object—instead of at a gray card. The meter has no brain, and so all it can do is indicate the strength of the light being reflected by the light-colored object. This light is certainly more than 18 percent of that which is iluminating the object. If we expose the film as indicated by the meter under such circumstances, the light-colored object will be reproduced as a medium-colored object, because that is the way in which the meter is calibrated. The same error, in reverse, occurs when a reading is made of a dark-colored object.

To use the meter properly, a filmer must keep the foregoing facts in mind. There are three things to remember:

1. When the meter is pointed at a medium-colored subject, the exposure which is indicated may be used.

2. If the meter is pointed at a light-colored subject, *more* exposure than the meter indicates should be given.

3. If the meter is pointed at a dark-colored subject, *less* exposure than the meter indicates should be given.

Thus, the question which is to be decided by the filmer is *how much more,* or *how much less* exposure must be given when a reading is taken of other than a medium-toned object. This depends upon the tone of the object. A fair-skinned person or a blonde will require one-half to one full stop more than the meter indicates, if a reading is taken using the light reflected from skin or hair. When a reading is made of whitish objects, exposure should be increased by two full stops. When a reading is made of an extremely dark subject, two full stops less than the meter indicates should be given. These are extremes, and the filmer will find it necessary to appraise the in-between subjects by accumulating experience.

*Using an incident-light type exposure meter*

The incident-light type exposure meter, such as the Nor-

wood, was developed in order to utilize the light illuminating a scene to calculate the exposure. For many years, it has been agreed by experts that this was the method least likely to lead to error. But it was only recently that this type of meter was made available to the amateur movie maker.

In use, the incident-light meter is pointed *toward the camera* from subject position. It will then indicate an exposure which is correct for medium-toned subjects. If the subject is light colored, the diaphragm should be closed down one half stop. For dark colored subjects, the diaphragm is opened up one half stop.

In this connection, it is interesting to note that the exposure table given earlier functions as does an incident light meter, since it depends on the light *falling* on the subject. It also should be noted that, in effect, the incident light meter provides the user with what would be a gray card reading with the reflected light meter. It is, however, done easily and without the need to carry the card about or to hold it up as the reading is made.

It should be kept in mind when using an incident light meter that the meter is calibrated so as to reproduce flesh tones accurately. Therefore, use of the stop indicated by the meter is advisable whenever persons appear in the scene, regardless of the compensation for light-colored or dark-colored objects otherwise suggested.

When taking a reading of distant scenes outdoors, such as landscapes or mountains, it is recommended that slightly less exposure be given to the film than is indicated by the incident light meter. To arrive at the proper exposure, it is suggested that a reading be taken with the meter pointed toward the camera, and a second reading made with the meter pointed at the sky. Both readings should be noted and an exposure half way between the two is given to the film.

When it comes to calculating the proper exposure for back lighted scenes, the cameraman must be the monitor of his meter, regardless of which type is used. Both instruments

provide a reading automatically which is correct for fully lighted subjects. In other words, meters do not know when a subject is back lighted. You do, and so you must make some adjustments.

Let us suppose that you are taking a picture of a girl in bright sunshine and that you wish to take advantage of the pleasing effects of back lighting for this particular scene. To the eye, the slanting sunshine outlines the head and shoulders of the girl strikingly, but her face and other detail are in shadow.

With the *reflected light type* meter you would take a reading of the shadow side of the subject, taking care that rays from the sun or from other objects are excluded. With the incident light meter, you would simply point the photosphere of the instrument at the camera, from subject viewpoint, allowing the sun's rays to fall upon the photosphere from the rear.

Under such circumstances, both meters would give you about the same reading. But if you were to expose the film as indicated by the meters, the shadow side of the subject would be reproduced as brightly as if it were in direct sunshine, or approximately so. In any case, the effect of back lighting would be washed out.

A suggestion would be to give one full stop less than indicated by meters under such circumstances, so that the shadow would then reproduce as a *shadow*. Later, you could study the picture on the screen and decide to give more or less correction depending upon your personal taste in the matter.

*Lighting contrast and subject contrast*

Color film will reproduce contrasting subjects satisfactorily within certain limits. Extremely light-colored and very dark-colored objects in the same scene will be reproduced fairly well if the contrast range does not exceed 1:16. This means that the brightest object must not be more than sixteen

times brighter than the darkest object. With the lens diaphragm set for medium toned objects (in this case, objects whose color is midway between the *extremes* included in the scene) then the entire range of contrasts (from 1 to 16) will be reproduced pleasingly on the screen.

If this ratio is exceeded in, for example, a scene outdoors where contrasts of 1:30 are often encountered, then the principal objects in the scene are favored and an exposure given which will reproduce those objects satisfactorily.

Contrasty lighting will aggravate subject contrast because objects in shaded areas naturally reflect less light than do objects which are fully illuminated. Therefore, it will be seen that, with color film, light should be projected into shaded areas; if that is impossible, a camera viewpoint should then be chosen which will make the details in the shadow area unimportant. In other words, simply do not photograph scenes with color film if there are important objects in both the highlighted and shaded areas. Such a scene would be a group of people, some of whom are in sunshine, others in shadow. Under these conditions, the results are certain to be disappointing.

Sometimes control over the lighting arrangement can be exercised—such as using a reflector to lighten the shadow side of a sunlit subject in making a closeup, or when working indoors with several movie lights. At such times, the main light is supplemented by a so-called fill-in light on the other side of the subject. It is generally conceded that the light reaching the subject from the fill-in light should be at least one quarter as bright as the highlighted side, or create a ratio of 1:4.

Where harsh subject contrasts are encountered in a scene, exposure latitude is reduced to the minimum—and but one diaphragm stop will give a satisfactory exposure. If this exposure is increased or decreased, then the light colored objects will be washed out or the dark colored objects will be reproduced too dark, as the case may be.

On the other hand, if a narrow range of contrasts is en-

countered—such as in yachting scenes on a gray day, when subject contrasts may not exceed 1:4—the scene will be reproduced quite satisfactorily even if a variant of two full stops either way from the correct stop is used. For this reason it can be said that the latitude of color film depends somewhat upon subject contrast.

*Exposure of color film indoors*

When a movie maker gets into his stride, many scenes will be photographed indoors, using Type A or perhaps Tungsten type color film in the camera. His first and basic problem will be one of simple illumination—or just getting enough light on the subject to achieve adequate exposure. And, although color emulsions are relatively slow in speed, this is not too difficult a problem to solve with modern lighting units.

Perhaps the most popular of these are the series of bulbs known as Photofloods, with the light of which Type A Kodachrome is specifically balanced and under which Tungsten Type Ansco Color may easily be exposed with the use of the UV-15 filter, already mentioned.

Photoflood bulbs for home use are made in two strengths or sizes (No. 1 and No. 2) and in two types in these sizes—inside frosted bulbs, which are to be used in efficient metal reflectors, and the RFL-2 and RSP-2 types (flood and spot), which are about equal in strength to the No. 2 but have reflecting surfaces built into them. There are also a 375 watt medium beam lamp (60° spot effect), and the B-1 and B-2 bulbs of blue glass, for use in combination with daylight and the Daylight Type color films.

Of this assortment, the No. 2 units are most often used for overall off-scene illumination, with the No. 1 bulbs used on-scene to dress up the setting in ways which will be discussed later. Here again, in the use of No. 2 flood bulbs for overall illumination, the simplest arrangement is the front-lighted one—which copies the same lighting out of doors. Exposures on such a lighting arrangement, because of its simplicity, may

often be estimated by the lamp-to-subject system. A table of such suggested exposures, using two No. 2 Photofloods in hard-surfaced metal reflectors, follows. With the use of two RFL-2 bulbs instead, these exposures should be increased by approximately ½ a stop.

RECOMMENDED EXPOSURES

| Light to subject in feet | Dark colored subjects | Average colored subjects | Light colored subjects |
|---|---|---|---|
| 3½ | f/5—5.6 | f/5.6—6.3 | f/6.3—8 |
| 4 | f/4—5.6 | f/5.6 | f/5.6—8 |
| 4½ | f/4 | f/4—5.6 | f/5.6 |
| 5 | f/3.5 | f/4+ | f/5.6— |
| 5½ | f/2.8—3.5 | f/4 | f/4—5.6 |
| 6 | f/2.8+ | f/3.5 | f/4+ |
| 7 | f/2.7 | f/2.8—3.5 | f/3.5—4 |
| 8 | f/2—2.7 | f/2.7 | f/2.8—3.5 |
| 9 | f/2 | f/2.7— | f/2.8+ |
| 10 | f/1.9— | f/1.9—2.7 | f/2.7 |
| 15 | ——— | f/1.4—1.6 | f/1.6—1.9 |

Depending, obviously, on an even spacing of one's lighting units in relation to the subject, this method of lighting and of exposure estimation is likely soon to become monotonous. The cameraman will find that he has splashed all his available wattage on the principal subject without regard for naturalness in his effects. A beginning filmer may take more than a few shots like this without realizing that this kind of lighting leaves something to be desired.

When he takes critical stock of his films he will see that it is mostly a question of stepping up the pleasingly subdued lighting effects found in the home under normal conditions. A way must be found to reproduce the same highlights and shadows, using lights ten times as strong as the ordinary home lights. Estimating exposure for such lighting is best done with the meter, following the instructions which come with it and the special cautions already discussed.

This natural effect is achieved by careful placing of lights. If any floor lamps or table lamps are within the field of view, the ordinary bulbs are first replaced by No. 1 Photoflood (or tungsten) bulbs—proper precautions being taken to see that the bulbs do not come in contact with the lampshades. The positions of the on-scene room lamps are then noted, and movie lamps are located outside the scene so that their light might conceivably be the light coming from the table or floor lamps.

When a person is in the scene, he should be lighted about the same as he would under normal room conditions. A strong key light may be located fairly high and to one side, at an angle of about 45 degrees to the subject; it should be augmented by a weaker fill-in light shining from the other side of the camera, very near camera viewpoint and at about the eye level of the actor. Some back lighting of the head and shoulders, on the side away from the key light, will produce so-called modeling, while walls and other objects in the background may be lighted independently to a degree which is consistent with your equipment and the mood of the scene.

RSP-2 photospot lamps are excellent for lighting the background, since they can project a strong beam of light and still be positioned well outside the picture margins. RFL-2 flood lamps or No. 2 Photofloods in metal reflectors are commonly used for the key and fill lighting. Regardless of where it is used, each light should be pointed and shifted about to determine the exact spot in which it will be most effective.

The lighting setup just described might be termed a basic lighting arrangement. In using it as a basic lighting formula, and in working out from it to other effects, there are a number of interesting points to keep in mind.

1. Having the key light too high illuminates the hair of a subject unduly and causes a distinct shadow to be cast under the nose and chin. *Light should not be so high that the shadow from the nose extends into the line of the lips.*

2. Using a fill-in light on the other side (the shadow side)

softens the shadows cast by the key light. It also highlights the eyes, which is very necessary in closeups. The ratio between the fill and the key light should never be more than 1:4 for color. In fact, it is considered that 1:3 gives sufficiently modeled effects, and 1:2 constitutes standard practice in most studios.

3. Working with just one key light is thought to be best because it makes for simplicity in the lighting scheme. If two or more lights are shining on a person's face from the key light direction, they will cast multiple shadows—one of the worst of the lighting sins.

4. Placing the fill-in light at about the eye level of the subject will create desirable catchlights in the eyes and it also tends to minimize cross-shadows from the subject's nose. If the fill-in light is much to the side, the cross-shadows will be noticeable, especially with a ratio of 1:2.

5. Whenever it is possible to do so, move main objects and persons away from background walls. If this is not done, there will be a shadow cast on the wall for each one of the front lights. With lights kept high and main subjects away from the walls, any shadows which are cast will not be seen. Floor lamps and table lamps, above all, should not cast shadows—especially multiple shadows on back walls—as this shows that they are not really the source of illumination which they are supposed to be.

6. Back lighting will be ineffective if it is seen from camera viewpoint against a highlighted background. For this reason, background walls should be held to a lower key in the areas in back of a subject's back lighted head and shoulders. This will provide the separation or modeling which is probably the most artistic tool a cameraman has at his command when arranging lights for interior filming. Much time and care should be devoted to "painting in" the accented back lighting, for it will always give foreground objects in a scene roundness and reality.

7. Avoid "arty" or bizarre lighting, even though you may feel the need to do something different with your lights. The first thing an inexperienced cameraman wants to do is to throw light up from floor level, thus casting grotesque shadows on the faces of his actors. Or he might go in for contrasts in side lighting, just to be different. These are intentional sins. But an unintentional and equally horrendous sin is committed when key lights are clamped to chair backs one on either side of the camera The result, which is harsh and "hot" in the extreme, has been aptly tagged "Third-Degree" lighting.

A good rule might be to avoid positioning your lights too immediately in any "handy" place. Instead, try to forget the *lights* for the time being, while you think of the *lighting*. If you decide in advance where your highlights, shadows, top light and modeling light should be *on the subject,* then all you have to do is to place the lights in such a way that the predetermined effects will be created.

## CHAPTER XVIII

## SOUND ON FILMS

WE HAVE already encountered, earlier in this book, very serviceable methods, by means of which an almost unlimited variety of sounds may accompany our movies. But sound may be provided for 16mm. pictures by recording it on the film that will be projected. The recording may be done after you have filmed the movie scenes; this procedure is known as "post recording." Sound may also be recorded simultaneously with the motion picture image. Whichever method we use, the result on the film itself will be the same.

So that it will not encroach upon the normal picture area, the "sound track" is located along the edge of the film that is used for sound recording. One row of the usual perforations is omitted, to provide space for it, but this omission will cause no difficulty in the film's passage through the camera or the projector.

This sound track may have jagged edges or it may vary only in density. The first of these appearances is known as a "variable area"; the second is called a "variable density." In both cases, the effect is produced by the action of a beam of light upon the sensitive film. This beam is affected by original sound impulses which are transformed into light impulses.

Post recording is, at present, more widely used in substandard filming than is the simultaneous recording of pictures and sound. It serves every purpose of the latter method, except that of achieving exact synchronization between sounds and

the actions that produce them. In post recording, music, narrative and other sounds are recorded, by competent technicians, on a separate film. This film and that upon which the picture was recorded are then used, by a laboratory, to produce the third, and final, film, which is actually employed in projection. Both black and white and color movies may be treated in this manner, with results that are of high quality and relatively small cost.

*Filming for post recording*

If you wish to add sound to your movies by post recording, you should take the pictures, on your regular film, at a camera speed of twenty four frames a second, because they must be projected at this rate, to achieve an adequate reproduction of sound. Except for this increased speed, your filming will be performed just as you would carry it on normally. Care is essential in exposure, especially with color footage, because your original film will be duplicated, to secure the final print. Overexposed shots and underexposed scenes should be eliminated entirely, as these will give poor results in duplication.

As you edit the picture that has been recorded at the faster camera speed, you should bear in mind the length of time in which the scene will appear on the screen, because it will require more footage than would be needed, if the filming were done at the rate of sixteen frames a second. Therefore, you should add fifty percent to the length of your scenes. If narration is to be used in your movie, scenes in which it is employed should be longer than those that will be accompanied only by music or by other sounds, because the audience will be receiving information both from the picture and from a voice.

Footage that has been filmed at sixteen frames a second can be used in post recording, if the action is such that the increased projection speed will not make it seem to be unpleasantly fast on the screen.

Before the technicians proceed to the actual post recording, a rehearsal of any music and sound effects with a double turn-

table is essential. Music of great contrast in volume of sound should be avoided, because a steady level of volume is preferable to one that is variable. If narration is used, music or incidental sounds must be subdued at those times in which the narrator speaks, while other sounds are heard. In this rehearsal, it is essential that the projection of the picture take place at twenty four frames a second. A stop watch should be used, to give exact information of the time for changes in the sound, according to the plan by which these should occur in the final projection.

From this rehearsal a "cue sheet" should result. This is a list of all sounds that will be post recorded and a statement of the exact times at which they will be employed. The recording technician will make use of it, as his guide; so it must be very accurate. The studio that performs your post recording will advise you of the form in which the cue sheet should be prepared, to meet particular requirements.

*The narrative*

The addition of music and other sounds to films has been discussed earlier in these pages, in a consideration of double turntables. But the problem of a narrative involves new factors. First of all, the narrative must be carefully planned, so that it will accomplish precisely what is desired, in technically perfect fashion.

To prepare a well timed narrative, we should first edit the film. However, we should not yet shorten scenes that may be too long. After the film has been edited, we should prepare a numbered list of the scenes that it contains. In this list, shots need not be described in greater detail than is essential for ready identification. The footage of each scene should be measured and its length should be entered beside the description. A convenient form for this scene list is provided by setting down, on one half of each page, the description and the footage of the scenes and by leaving the other half blank, so that, when the narrative has been completed, we shall have place for it.

In the next step, we determine the time, in seconds, that is required for the projection of each scene. A film that is to be projected at twenty four frames a second requires 1.67 seconds of screen time for each foot. So, a scene that is one foot long will last for approximately 1.7 seconds on the screen, while a scene that runs ten feet will consume 16.7 seconds in projection.

With the list of scenes and the notations of the time that is required for each, as a guide, one can write the narrative. After a rough draft has been completed, rehearse it with the aid of a stop watch. You will probably find that it is necessary to eliminate phrases, and even complete thoughts, for we tend to write too much for narration. Remember, also, that you will want to shorten some of the scenes, unless you insist upon leaving them as they are, in order to afford time for a longer commentary.

The next step in the procedure is the rehearsal of the narration, while the film is projected. You should time the delivery to the flow of the film and you should make sure that you have provided pauses that will permit the speaker to pronounce his words in synchronism with the pictures that they should accompany. The final step is the completion of the editing and the modification of the narrative, to agree with the amended time scale.

The narration should be rehearsed with a screening of the film, in the laboratory where the sound will be recorded. It may be found that minor adjustments in either film or narrative will be advisable, in order that the best possible effect may be secured.

In preparing a narrative that will accompany a movie, whether it is to be delivered in person, as a lecture, or whether it will be recorded permanently on a sound track, one should follow the all important rule of title writing, *Don't tip off!*

Do not tell the audience what it will see next and do not describe what it is seeing now. The commentary should amplify, and not duplicate, the content of the picture. It affords

an opportunity to make the movie more interesting, but, if you tell the audience what it can see on the screen, you will only induce boredom.

It is very important to provide pauses in the narration. You should not compel the speaker to race through your words, in order to keep up with the film. He must, at least, have time to catch his breath.

Not infrequently, you may want to have some word or phrase spoken in precise synchronism with the appearance of a scene; if you do not provide a pause in the flow of narration, just before the scene appears, it will be very difficult for any speaker to time his delivery.

Then, too, sound films of the lecture type are generally accompanied by music, and there should be some opportunity for the audience to hear it. While the commentator speaks, the music should be subdued, but, when he pauses for a few moments, its volume may be increased. Such a variation provides a pleasing contrast and prevents the voice from becoming monotonous.

When you rehearse the film in conjunction with narration, music and sound effects, if they are used, be sure that none of these interferes with another and satisfy yourself that the pauses in narration are sufficiently lengthy, and numerous enough to create a pleasing effect.

Subtitles may be included advantageously in a sound film, for they are very effective, in calling attention to a new type of subject matter within the film and in emphasizing some important point. They also will provide pauses that give excellent opportunities to introduce new musical themes. Not infrequently, a one reel sound movie, that is made for teaching or training purposes, will include three or four subtitles.

The Amateur Cinema League will suggest themes for narratives of sound on film pictures and will review narratives that have been written.

After the narrative has been planned, we must decide whose voice is to deliver it. There may be an advantage in recording

a familiar voice, although this is not great in post recording, since its owner will not be seen in the act of speaking. If you are persuaded that your own voice will best give the narration, you should obtain disinterested opinion. Generally, persons who are trained in this work will do it better.

After these preliminary procedures have been carried out, you can, if you wish, send the cue sheet and the picture to a recording studio, and await the finished product. The more exactly you have indicated your desires, the more competently can the recording technician give you what you want.

The choice of music for use with movies has already been discussed in earlier references in this book, that dealt with double turntables. One thing must be remembered, however, in this connection. Your film will probably be shown publicly; so, you must investigate musical copyrights, whether you use performed or recorded music. The advice of the recording studio should be secured, before your choice is made final.

If it should appear to be essential that the narrator be shown in the act of speaking, footage that will record him can be made and added to the film, by the studio that carries out the post recording process. This procedure is known as "direct" or "spot" recording.

*Simultaneous recording*

Cameras and recorders that will place pictures and sound—of all kinds—simultaneously on 16mm. film, are available. They range from relatively simple instruments to those that are both complex and expensive. With these cameras and recorders, personal and special purpose filmers may achieve results on substandard film that are of very high quality. The technical problems of this kind of movie making are not baffling, by any means; however, they are of interest chiefly to persons who want to make sound films, and, because of the limitation of the size of this book, they are not discussed here. Members of the Amateur Cinema League may obtain information concerning them from League headquarters.

A discussion of editing sound film is also omitted. It involves procedures that are exact and that must be performed carefully. The League will give information about them to its members.

*Projection*

Sound projectors will reproduce both sound and pictures. Although they have special features, they are not difficult to operate. Care must be taken, in threading film in a sound projector, because its travel will be somewhat more devious than it would be in silent machines and because the speed of this travel will be increased. The projector must be kept scrupulously clean, as the presence of foreign bodies will affect the quality of the sound very perceptibly. As is the case with every piece of movie making equipment, the instructions of the manufacturer should be followed.

Sound projectors possess amplifiers and loud speakers, which require about the same amount of care as does the average radio. After extensive use, the tubes in an amplifier should be tested, to insure proper results.

When you show sound on film pictures, you should test the acoustic properties of the room where the showing will take place, and you should do this well in advance of the presentation. Unpleasant results may be reduced, if not eliminated, by a different placement of the loud speaker or by hanging draperies over windows and other parts of the room.

Just as you can secure additional films, to amplify your own, in silent movie programs, so can you buy or rent a large variety of sound on film pictures from movie libraries. Subjects may also be obtained from various sources without charge, except for postage. Their addition to your presentation will bring increased pleasure to your audience.

# CHAPTER XIX

## SPECIAL PURPOSE FILMS

AS HIS abilities grow with experience, a movie maker will generally want to turn them to more special purposes. His hobby will begin to serve practical, as well as recreative, ends.

*Business films*

The subject matter that is most often selected for this newer expression is that which is nearest at hand—one's daily occupation. There are few trades, industries or professions that are not well adapted to good movies. In its simplest form, a film of your business need be little more than a factual record that will be of interest and value to the men who work in your field. It could begin, for example, with the arrival of raw materials at a factory, and it could follow them through the processes of manufacture, until they emerge as finished products. Sometimes, the effectiveness of such a continuity may be heightened, by opening the movie with a view of the finished products, in daily use, and by returning, then, to the beginning of the story, which will show "how they got that way." In any case, an interesting record will result, if the movie maker follows, in this project, as in others, the sound methods of good motion picture treatment that have already been discussed.

When you film inside an office or a factory, you will encounter the problem of lighting areas that are much larger than those with which you have to deal in a house. One solu-

tion of this problem is reached by confining your filming to close shots; this is a limitation that may be an actual advantage, because the story of most of the processes of business or of manufacturing is told better in close shots than in medium shots.

To film larger views of areas that are found inside factories, one should use No. 4 flood bulbs, installed in reflecting units. It may be necessary to secure special electric cables, to supply the current that is required for these lamps of larger wattage.

A plain background will improve closeups of the details of manufacture; it will also simplify lighting. If the arrangement of the scene does not provide one, you can easily supply the deficiency, by placing a piece of light gray wallboard behind the subject.

With business films, we can serve not only those who are employed in our occupation; these movies may also be of real aid in the conduct of business itself. Without going beyond the immediate circle of a firm's employees, the motion picture can help an enterprise in many ways. Films have been made that show the results of tests of wearing power, of tensile strengths or of reactions to heat and cold; these records are preserved for repeated study.

Simple and complex movements of workmen and the travel of products through a factory, on assembly lines and from one department to another, have been analyzed, by means of movies that are filmed in normal and in slow motion. Human effort, time and money have been saved, as a result of their revelations.

Employees, whether they work in a factory or in the distant outposts of a large concern, have been trained by films, in everything from safety to salesmanship. The substandard movie, in the hands of an imaginative and far seeing business man, brings the mountain to Mohammed—and with telling effect.

Outside the confines of your office or factory, the business film has still other functions, which are, possibly, more potent

and, certainly, more widely appealing than those that it performs within your organization. These functions may range from an effort that is chiefly designed to give information, on through persuasion, to an eventual outright bid for sales. In films of this kind, the business man, be he merchant, manufacturer or professional, is talking directly to those members of the public whom he hopes to make customers. Formerly, these pictures, because of their considerable cost, were used only by a few relatively large companies. Today, since substandard cameras and film are available to everybody, the butcher or the baker may turn his skill in filming to account and profit. Short pictures, that take no more than five minutes in showing, are presented in store windows in continuous projectors. Longer and more comprehensive efforts may be exhibited before commercial groups and in local schools, clubs, and even churches.

Business may address its message to audiences that are to be found outside its own community. From New York City, a manufacturer of elevators distributes an entire series of pictures of vertical transportation, which were produced directly on 16mm. film by members of his staff. From Florida, a grower of citrus fruits tells the rest of the world about the superlative qualities of his oranges and lemons—and the camera that recorded this picture also filmed his children. From Chicago, a large air transport company calls attention to the ease and comfort of travel over its many lines, by means of a film that was made entirely by one of its pilots, who used his own, and not the company's time, for this purpose.

Some business films do not sell products or services openly. Indeed, many concerns, particularly banks, have found that they may best bring themselves to the public's attention by indirection. One large urban bank, that is located in the southern part of the United States, has secured an attractive film that pictures the city in which it maintains its headquarters; this picture, in which the bank appears only as the agent of presentation, is distributed, as a free loan, by the Conservation

Commission of the State which the bank serves. A smaller bank, which is located in an agricultural county of a Southwestern State, has prepared a series of pictures that discuss the problems of farming. These are presented by members of the bank's staff at meetings of farmers.

Public utilities, that depend so largely upon the good will of the residents of their areas, have recognized the movie as an able servant. In northern New York, a large electric company found that its rural clientele was critical of new, and higher rates. A dramatic presentation, in film, which shows the expense and the human suffering that are involved in maintaining uninterrupted service in wintry weather, turned the tide of opinion. Railroads, everywhere, use films, to show the advantages of the regions that they serve.

*Persuasive films*

Movies, with their possibilities of subtle persuasion and of dramatic appeal, are very effective instruments for social workers and for civil servants. The American Red Cross, the Boy Scouts of America, the Travelers Aid Society and other national and local bodies use films that are produced, in many instances, by competent amateurs. Hospitals have found new funds and have solved old problems, with the camera's aid. Cities commend themselves, in movies, to tourists, business men and home seekers. Departments of city governments boast of the honesty of local weights and measures, the excellence of swimming pools or the purity of milk, by means of films that are often made by a departmental Tom, Dick or Harry.

The increasingly popular summer camps use movies, to attract new patrons and to urge the visitors of other years to return. Parents, whose children are eager to live in one of these places for a part of the summer, are more likely to send the youngsters to a camp, if they can be convinced, in film, that sanitation and supervision are given expert attention.

*Religious films*

The church uses the motion picture regularly. Sometimes, the clerical staff and the congregation are recorded, as a part of the history of a parish. If a new building is erected, the old home of the church may be shown, in use, in a motion picture, before the edifice is given up. Groups of Sunday school students have dramatized the great stories of the Bible, both in their traditional aspects and in striking transmutations to modern circumstances. Important conclaves are recorded by a church's national headquarters. Rituals have been filmed for the instruction of the clergy and the laity.

Movies serve the church particularly well in the mission field. They have, at last, provided a medium by means of which those lonely workers in far places—the missionaries—may send home a living record of their problems and their progress, their trials and their triumphs.

*Teaching films*

The use of movies by teachers is not a new activity. Early in the life of theatrical motion pictures, educators made repeated efforts, to secure films that would amplify other forms of instruction. Those that were made available to teachers, by theatrical companies, were, at best, selections of footage that had been shot originally for other reasons. With the development of substandard filming, movies were produced specifically for employment in schools. The latest application of narrow width filming to the needs of education has come with the individual production of pictures by teachers.

A superior teacher will prefer his own course outlines to those that are handed to him; similarly, he will want to use movies that contain what he believes to be essential. So, many teachers have made their own films. These cover a wide range, from the problems of simple fractions to the details of complex scientific subjects, from history to histrionics, from making cakes to binding books. Many of these movies have been made in classrooms, or with the aid of students, and some of

them have been produced as group projects, by an entire class. It has been found that students are more likely to understand anything, if they have had to discover how to make somebody else understand it.

Colleges have gone still further in the matter of producing films that will meet exact needs, and we find, in some institutions, regular departments or well unified groups, whose function is the preparation of movies for faculty members who use them.

*Medical, surgical and scientific films*

Surgeons, dentists, physicians, medical schools and hospitals are active users of substandard films. Case records, operative techniques, elaborate prosthetics and many other procedures are filmed.

Scientists record their observations and experiments on film, and a motion picture camera is an important adjunct to a well equipped laboratory, because its records can amplify, and even supplant, those that were formerly made only by means of the written word.

Highly elaborate filming mechanisms are sometimes employed for medical and scientific pictures; in almost every instance, a high degree of precision in the operation of the camera is absolutely requisite. Special lighting must be employed; the extreme closeups, that are so necessary an accompaniment to this kind of movie making, call for the careful determination of focus and for the exact location of minute objects in the lens field. If anybody undertakes this work, he will be well advised to consult the Amateur Cinema League, in advance of actual shooting, to make sure that he will avoid costly errors and that he will not spoil records that cannot be made again.

*Film plans*

In special purpose filming, the plan is all important. We must always remember that we are addressing a public that may not be of our own choosing and that we shall not in-

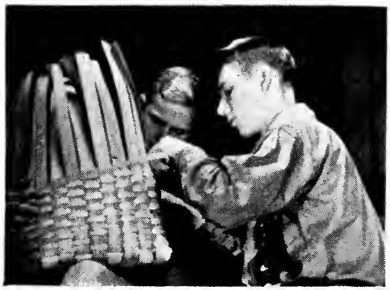
John V. Hansen, ACL

CAREFUL COMPOSITIONS FROM AN AMATEUR COLOR MOVIE

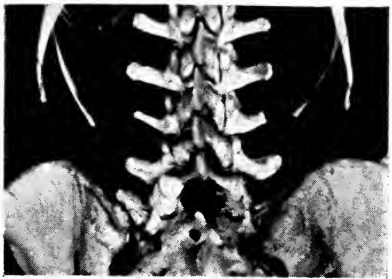
At the right, frames from a photoplay made by an amateur movie club. Below, frames from scenes of two practical film subjects, a boys' camp and medical technique.

Boy Scouts of America

Silver Screen Players



Leslie P. Thatcher, ACL



variably be able to add something to our footage, by means of comments in projection. What is recorded must be crystal clear to many persons of different capacities for understanding.

Medical and scientific procedures will sometimes enforce their own continuity, but other special purpose films will, generally, accomplish their end or fail to reach it, depending upon the way in which they tell their stories. In business films and in persuasive movies, we are trying to win confidence and to create good will; so we cannot be inept or incoherent. Our presentation may be direct or it may be subtle, but it must never be dull or indecisive. Clarity is the absolute essential, and clarity calls for hard thinking, before ever a foot of film is exposed.

*What is the purpose of our film?* To get an answer to this apparently simple question is, perhaps, the hardest task of all, in planning special purpose pictures. The reason for the difficulty lies in the fact that human beings are generally impelled by several purposes; consequently, they conclude that they can, in film, serve several purposes. We might as well recognize, at the very outset, that this cannot be done with movies. We must choose one primary goal and we must bend all our efforts toward its achievement.

We cannot answer the important question, that we have just stated, until we have answered another that is implied by it. *To what type of audience is our picture directed?* Suppose that we want to make a film that will sell washing machines. We say to ourselves that this is a simple matter. But we cannot stop here, because our second question comes immediately into play. Will it sell them at wholesale? If this is the case, we may want to discuss ready supply, distribution of territory, discounts and other matters that wholesale merchants will need to know. Will the film sell washing machines to retailers? They will be interested in methods of displaying machines, of demonstrating them and of urging them upon ultimate consumers. Will our movie sell our product to housewives? They will be interested in performance, in design and in ease and economy of operation, but they will have no inter-

est in the things that wholesale and retail merchants must be told.

This example proves to us that a film cannot serve multiple purposes. It must do one thing and it must do that one thing well.

Now that we know our specific aim, we find still another question. *How will the finished film be presented?* We may decide to make a silent movie, that will be complete in itself, so that it may be projected anywhere and by anybody. We may want to record sound on the footage, in addition to pictures. If our film is to be presented only by our own agents, will it be silent or will it have sound? Will our representative speak before the showing or after it? Will he accompany it by some discussion? He may, perhaps, use a double turntable. We cannot begin to shoot, until we have reached a clear decision.

These three questions are germane to all special purpose films, although some of them may have less importance, when we plan enterprises of a highly specialized kind, such as scientific and medical films or certain kinds of teaching pictures.

Now, the preliminary decisions having been made, we are ready to attack the plan itself. It will, of course, follow the general principles that have been outlined earlier in this book, but it should be made in greater detail than would be called for by many personal filming efforts. Since special purpose films may be compared to public addresses or to written discussions that are intended for publication, their outlines should be as clear and as logical as those of formal speeches or manuscripts.

Each part of the film plan should be tested, as we develop it, for any weakness in clarity or logic. When it has been completed, it should be checked carefully, not only to bring these faults to light, but, even more, to make absolutely certain that the movie, as we have planned it, will do what we want it to do, as nearly as we can be sure of this, in advance. It should begin at a definite beginning, carry on through entirely

understandable sections and, finally, reach a definite and climactic end. If it does not seem that the completed plan will insure these things, it should be recast, to make sure that they will be accomplished.

*Human significance*

The plan of a film that is designed to sell a product should not fail to take into account the human significance of that product. By this term, we mean such questions as these: What value has the product for the average person? What are the pressures or needs that will cause anybody to buy it?

To return to our washing machine, let us see what human significance it may have. Obviously, it makes the back breaking labor of the old fashioned "wash day" unnecessary. It cleanses garments better, in less time and for less money. Here are the real reasons why a woman will like it; we know at once that these reasons must be presented persuasively and clearly in any film that endeavors to sell washing machines.

What is the human significance of a savings bank? It provides protection, in case of illness, security in old age and ready funds, when we want to buy an automobile or to enjoy a cruise to the Bahamas. If you will dramatize any one of these facts, you will have the basis for your film plan.

A weakness of business films is found in a too detailed exposition of manufacturing processes. The public is almost never as interested in these, as is the manufacturer himself. Unless they contribute directly and quite evidently to the value of the product in its human service, they are best left out of any movie presentation. Housewives will not ask how the gears of a washing machine are ground; they may want to know why those gears make the machine more effective. But they will appreciate a seamless wash tub, that is spun from aluminum, because they know that it will not leak. They will understand the value to them of a well placed wringer that has adequate protective features. If you make movies of your own products, guard against the inclusion of footage that deals

with things of which you are proud, but which are difficult to express in human terms.

We know that a film cannot be successful, if it tries to present too many ideas. Experience has shown that it will fail, also, if it has too many producers. Whoever would make a business film or a persuasive picture must insist upon a clean cut understanding as to whose word is law. It may be his own word; it may be that of his superior, but it cannot be the divergent opinions of several eager, but relatively uninformed, persons who are members of the organization's staff.

The most reasonable solution of this problem is found when a business executive outlines the ideas that he would like to have presented in film, and when the movie maker decides which of these are capable of being filmed and how the filming must be accomplished.

Just as special purpose films may be spoiled by too many ideas and by too many producers, so they may be made dull and ponderous by too many titles. A cameraman who titles his personal films with good judgment is sometimes overwhelmed by the novelty of attempting to show special processes, with the result that he relies so greatly upon titles, to explain what the film presents, that he offers more captions than actions. These verbal intrusions will grow long, even to the use of the indefensible scroll title, and the film will become a kind of illustrated sign board. Even if we make our movies for the purpose of presenting details of a special kind, we must never forget that they are, first of all, movies and that they must be made according to the rules by which good movies are filmed.

*Photoplays*

A photoplay may be produced purely for entertainment, or it may be planned to serve other purposes, as well. Many persuasive, business and teaching films are actually photoplays, which require carefully prepared plots, well chosen actors and expert direction.

A simple, homemade photoplay, that may be produced with members of your family as the cast and with the cameraman as the director, is real fun, both in its making and in its showing. It is likely to please your friends to a greater extent than will any other type of family picture.

Making an amateur photoplay with maximum pleasure and minimum difficulty is greatly furthered by choosing a plot which can be filmed by means of settings, locations and actors that are readily available. If, also, the actors are not required to portray emotions and attitudes that lie outside their experience and if the plot is both brief and simple, the photoplay is likely to be a success.

If you live on a ranch, you can film a "Western"; if you dwell in an apartment in New York City, you will do well to plan a picture that will fit that setting. If your prospective actors are guests at a week end party, you should choose a plot that is based upon such an event. Then, the settings and the incidental action that you may require will be right at hand.

### *Plots*

Plots are adaptable, and it is easy to transpose the action or locale, to fit actors or settings that are available. One can glean simple situations for plots from short stories or from the comic sections of newspapers, and one can alter them to fit his needs.

If John loves Marjorie, and wants to keep other men away from her, the story can be located on a New England farm, in Palm Beach or in Chicago. John can be cast as a farmer, a life guard or a business man. Marjorie can be a high school girl, a vacationing debutante or a stenographer.

Since basic plots are so adaptable, it is easy enough to cut your suit to fit your cloth. One caution should be observed: most plots that you might use will require shortening and simplification, since the production of elaborate stories calls for great effort and quantities of film. You will be surprised

by the footage that will be needed, to film even a simple plot.

Elaborate plots are also likely to demand skilful acting, and, unless you want to produce a burlesque—and this is fun, too—you should not demand greater Thespian ability than your actors can supply.

If you do not find a plot that fits your needs, you can ask the Amateur Cinema League for a Film Treatment Chart. If you will prepare this and return it to the League, a plot treatment that is made to your order will be sent to you.

You may prefer to write a plot. You will probably want to do this, if the photoplay is designed to serve some particular purpose, beyond entertainment. You might want to tell, in dramatic form, the story of the development of safeguards for health; you might want to produce a photoplay to advertise, indirectly, the advantages of a summer camp. You may want to show how your heroine attains some particular objective by using a certain product, which the film is designed to advertise, although this treatment has been worn threadbare by trite handling in the comic sections of newspapers, in which Sally gets her man or becomes the leader of her set, by means of soap, tea, cosmetics or a tinned comestible.

The proof of a good movie plot is found in its capacity to stimulate curiosity. The audience should want to know what will happen next. Interest will be maintained by curiosity, as the film story develops.

The opening of a plot states the problem and poses the question that the climax will answer. The patient is ill. Will he recover? John loves Mary. Will he win her? Bobby wants to help Daddy with his photography, so, while Dad is absent, he goes to work in the darkroom. What will happen?

A plot's development occurs in its "middle action." The patient does not get well immediately; John does not win Mary at once. There are obstacles that must be overcome. And here enters the villain, who represents the opposing forces. The villain may be nature, the perversity of fate or a specific person who has plans that run counter to those of the hero.

The extent to which the middle action is developed determines the length of the photoplay. There may be numerous obstacles and all kinds of conditional factors. John loves Mary, and she appears to return his affection, but the son of John's employer also loves her, and John is afraid that he will lose his position. The employer's son is heavily in debt, and he is desperate. He steals the jewels of his hostess, during the course of a week end party, and Mary is accused of the theft.

The plot is advanced, not by a steady progression of difficulties that mount relentlessly to a climax, but by a development which lets tension rise, diminish and then rise again. If trials are heaped upon the hero with monotonous regularity, the story will be too grim for our modern taste; hence, we have subsidiary motives and "comedy relief."

At the end, or climax, of the plot, the solution for which the audience has been waiting is provided. We learn whether John or the thief gets Mary and whether the serum arrives in time, so that the patient is saved. The solution itself may pose a broad social question—shall these conditions be allowed to continue?—but the climax has one chief function, which is to satisfy the curiosity that has been aroused.

Two very useful devices of movie plots are the "hook," by which you can stimulate curiosity in the first two or three scenes of a picture, and the "twist," that enables you to surprise your audience with a novel ending. The "hook" may be applied to any film that is dramatic or quasi dramatic. In the first shot, Jack is seen, sharpening an enormous knife. Is he planning a murder? No. He is about to hack a can of beans open. Later scenes will reveal the fact that he had tried, earlier, to make use of a flimsy can opener and that he had reached the end of his patience.

The "twist," or surprise ending, is a device that is well known to every patron of the theatrical screen. The brutish thug was *not* the murderer; the suave attorney was the guilty man. John did *not* win Mary; she had enough of his fears and vacillation, so she took the son of the hostess, leaving both John and the jewel thief flat.

*Treatments*

When our plot has been selected, we have then to write a "treatment." This is a synopsis of the story, as our picture will tell it, but a synopsis that describes the story in terms of what will be seen on the screen, with all extraneous matters excluded. When we have prepared the treatment, we are ready, at last, for our scenario. This is also known as a script.

*Scenarios*

Although we may film many kinds of movies without the aid of a written script, a photoplay, a persuasive movie or a business film requires a carefully prepared scenario. Earlier in this book, we have seen examples of short scenarios, or of parts of them. The scenario is nothing more than a list of scenes, which is amplified by notations of the camera positions that each requires.

Most filmers, in their early scenarios, include too much action in one scene. Doing this tends to make the story monotonous and to cause the omission of close shots of things that should be seen. Although it would actually be possible to use too many different camera positions, to portray a sequence of action, this superfluity is never encountered, and the error is always in the other direction.

The typographical style of a scenario is not important; however, the form that follows has been found to be convenient.

| Scene number | Camera position | Setting or location | Description of action and notations of camera technique and methods of direction. |
|---|---|---|---|
| Scene 1. | Medium shot. | Boat house. | Johns rows dinghy into scene. He jumps out, carrying a package which he carefully places beside him, while he ties painter to wharf. |

| | | | |
|---|---|---|---|
| Scene 2. | Semi closeup. | Boat house. | John is tying knot, working in haste. He looks around furtively. |
| Scene 3. | Medium shot. | Boat house. | John finishes. Stands upright, and wipes his forehead, looking about apprehensively. He picks up his package carefully; then, he suddenly looks past camera. He hears something. He pauses; then he darts into boat house. |
| Scene 4. | Medium shot. | Path. | Reverse camera position, to show Mary running toward boat house. She waves a letter. |
| Scene 5. | Semi closeup. | Boat house. | Mary runs into scene. Stops short, bewildered. She shouts. |

Title 1. *"John! Oh, John!"*

| | | | |
|---|---|---|---|
| Scene 6. | Medium shot. | Boat house. | Mary looks anxiously about. John comes out of boat house behind her. He is not carrying the package. Mary turns, sees him and runs toward him. |
| Scene 7. | Semi closeup. | Boat house. | John, from Mary's viewpoint. He speaks. |

Title 2. *"What's the fuss, Mary?"*

Scene 8. Semi closeup. Boat house. Include both John and Mary. Mary evidently asks John where he has been. John replies vaguely and shrugs his shoulders. John reaches for the letter. Mary gives it to him.

*Spoken titles*

The spoken title is a necessity that is peculiar to the silent movie; one will see few examples of its use today, in theatrical films. In the employment of spoken titles, the prime requisite is that the speaker shall be identified clearly. If two persons are talking together, we must indicate definitely, by the context of the title or by the accompanying shots, which of them is supposed to have spoken the words of the caption.

In the short section of a scenario that we have just read, there could be no doubt that it was Mary who called, "John! Oh, John!" (Note that this title tells the audience the name of an important character in the story.) The title which represents John's reply is preceded by a semi closeup of the speaker; also, the context of the title is such that he, alone, could have spoken it. (Note that the second caption informs the audience of Mary's name.)

For the production of a photoplay or a special purpose film, a "location script," or list of settings and locations, is a valuable adjunct. Under each entry on this list, all scenes that will be made in that particular place should be grouped. If a location script is employed, we may shoot, at one time, the whole group of scenes that are to be filmed in a certain neighborhood. Doing this will save us the necessity of a second visit to the locale.

In producing a dramatic film, one must be careful of minor

details. Mary must not wear one dress, in a medium shot (filmed on Tuesday), and another, in the succeeding closeup (filmed during the following week end).

Before filming begins, the amateur photoplay maker should assure himself that the entire cast is costumed correctly and that all requisite properties and accessories are at hand. When groups or movie clubs produce photoplays, one member may be put in charge of properties, another may check costumes, a third may handle lights and reflectors and a fourth may have the task of following the script carefully, to make sure that every scene is filmed and that the action accords with the preconceived plan.

*Human records*

For the ambitious and imaginative movie maker, there is a real challenge in the human record. Although pictures of this kind are included in the category of special purpose films largely for convenience, they are of a special kind, because they offer an unexcelled opportunity for artistic expression.

Human records are films that tell us how people live, how they work and how they play. They should be simple and sincere, and they should present actual life. Although many pictures of this kind have been packed with propaganda and have falsified reality, to prove political or economic theories, a human record should have no axe to grind. It should rest on facts, as these facts are observed without ulterior purpose, by a cameraman who seeks beauty and simplicity, rather than arguments.

Human records that have won amateur honors are *Mexican Fiestas* and *L'Ile d'Orléans,* which range over a country or an area, and *Riches from the Sea* and *Vida Pacoima,* that are confined to one locality. Their makers presented life, without bending it to serve a special end, and, having seen its significance, they permitted this to speak for itself, without added comment. That is the true technique of human records.

## CHAPTER XX

## PROFITS FROM YOUR MOVIES

THERE is no reason why a hobby should not pay, in part, at least, its own way.

Many amateur filmers have found that they can meet some of the expenses of their movie making, if not all of them, by placing the special abilities, that they have acquired, at the disposal of other persons who can use them. For some cameramen, substandard movies have begun as a hobby and have continued as a livelihood. This is a logical progression, because, as a filmer's skill and the amount of his equipment increase, opportunities for employing them commercially are more often presented.

If profits from your movies attract you, the first step toward earning them may be found in doing for others just what you have been doing for yourself, that is, in making personal films, and in making them, not for your own pleasure, but to serve other people. Every family that has a movie projector should have good film records of important occasions in its history. Weddings, birthdays, reunions, graduation ceremonies and anniversaries of all kinds afford opportunities for your camera to pay its way. Golfers will find that slow motion analyses of their strokes are worth buying; coaches of athletic teams can be persuaded to find money for films that will aid them in their work.

Projection also can bring profits. Churches, schools and clubs frequently want movies for particular occasions; you can provide these, by using your own projector and by renting

films that are commercially available. Somebody in your community may need your help in editing and titling his footage, particularly, if he is faced with a time limit and can neither do the work himself nor send his films to some editing and titling company that is located at a distance from his home.

*Business filming to order*

In the chapter that precedes this one, we have read about business films. Many firms can use them, but they lack competent filmers who can make them. There is no reason why you should not supply this deficiency in your own neighborhood, because you know the business men in it and they know you. But you must take the initiative, and you cannot expect to find a ready reception of your suggestions, because not everybody is convinced that movies will serve his practical requirements.

A substandard filmer who would turn his skill to commercial ends must be an active salesman; he must look about his community, to find instances in which films could be of genuine service to his friends, in their daily work; he must then present a cogent plan for his movie enterprise and he must be able to give to it such interest and conviction that his aid will be enlisted wholeheartedly. Proposals should be suited to the resources of the firm that will, hopefully, employ him, to carry them out.

If you have to do with business enterprises of some size, you may find that their executives will have spent large sums of money, in the past, for motion pictures which did not bring in enough extra revenue to justify their high cost, because the films were produced in 35mm. width and with the elaborate methods of commercial studios. Perhaps, these executives may not have bought movies; they may only have decided against buying them, after an investigation of their expense. If you meet these situations, you should emphasize the greatly lessened cost of 16mm. production, but you should make it

quite clear that your plans do not provide for elaborate studio facilities.

Sometimes, you can persuade several small firms to unite in a filming enterprise, which you could offer under a title, such as *The Merchants of Main Street Present.* In a production of this kind, the costs would be divided among a number of concerns, so that the expense, to be borne by each of them, would be small.

Business filming has been undertaken by many movie makers, and pictures have been made, in small communities and in large centers of commerce, that show such widely assorted activities as dairy farming and the methods of home loan banks.

*Working for doctors*

Surgeons and dentists, as we have learned, make full use of movies, in exchanging information about their technique, although not every one of them can do his own filming. You may very well visit the members of these professions in your city or town, to discover whether some of them have not developed new professional methods that they would like to show to their colleagues. Hospitals find movies to be of great value, in training internes and nurses; medical associations may raise funds, to film a presentation of some aspect of community health; colleges are large users of motion pictures, in their medical, surgical and dental schools. Movies that deal with these matters call for very special methods of production and for patience and exactness, but they are more than normally profitable, because their length may be extensive, since they have to present full technical procedures with few elisions.

*Films for organizations*

Organizations of many kinds use movies in securing funds, to carry on their activities. Community chests, chambers of commerce, educational, civic, religious, scientific and charitable

bodies will appeal, from time to time, for public support. These "drives" will give the alert filmer occasions for selling his services. Sometimes, a club or a church will celebrate some event in its history; a film record of this celebration may well be suggested as a proper accompaniment of the event itself.

*Films as detectives*

Motion pictures have become expert witnesses in the court room. Making films, to serve this legal purpose, is better accomplished with small, substandard cameras than with larger, and more readily observed, equipment. Movies have been chiefly employed in trials that result from claims for insurance, when somebody fraudulently asks payment for a disability which is, allegedly, caused by an accident against which he is insured. His witnesses, expert and ordinary, may be totally confounded by the projection of films that show him, active and agile, going about his daily work, although his legal contention is that he cannot engage in any gainful pursuit.

Films that will be projected before courts must be made after simple, but rigid, requirements. Footage must be uncut and unedited, because it must present a series of actions just as they occurred, and there can be no recourse to tricks of the camera. A movie maker who films evidential pictures must project them in court. Since he will be offered as an expert—in the legal sense of this term—he must expect hostile cross examination. He should be prepared to give a straightforward account of the whole procedure of filming, of preparing the film for projection and of the projection itself.

*Films with lectures*

All the world seems to love a lecturer, especially if he shows movies. Whether it is easier for a lecturer to learn movie making or for a movie maker to learn lecturing must be left to individual research. It is, however, possible for a movie maker to show his own pictures and to talk about them, be-

cause many filmers have done this very thing with profit. The churches, schools and clubs of your community may be willing to pay you a fee for showing the results of your Mexican holiday on a screen. If you can persuade them to do this, you will, perhaps, have built a springboard from which you may eventually leap into the full current of lecturing and, thus, provide for yourself a pleasant and a lucrative occupation.

The opportunities to make profits from your movies exist only in the non theatrical field. Experience has shown that theatrical motion picture producers are very unlikely purchasers of substandard footage, except in those rare instances in which some unpredictable and exceptional event has occurred that theatrical newsreel men failed to film, but which a personal filmer has recorded. Then, any footage is better than none, as far as the newsreel companies are concerned, and yours, if you were at hand, will probably be salable. The unwillingness of 35mm. motion picture companies to use 16mm. movies does not proceed, necessarily, from a dislike of the narrower film, but from the difficulty of its employment, since substandard footage must be reproduced on 35mm. film; this reproduction will increase the "grain" of the projected picture, so that the result on the screen will be similar to that of a halftone engraving in a newspaper which employs a very coarse "screen," in preparing a plate from an original photograph. Also, the projection speed that is used for 35mm. sound prints, in theatrical showings, is different from that which is employed with 16mm. silent footage.

*Television?*

There is some probability that television will be able to make use of substandard movies, because experiments have already been conducted, to determine the feasibility of such an employment. At present, only short movies, running between one hundred and two hundred feet of 16mm. film, are acceptable for television. Subjects must, therefore, be brief, but

they should be complete. They will best report some relatively unknown activity, so that they will have both educational value and human interest. For the happiest results in television reproduction, long shots should be avoided and medium shots and closer views should be taken of whatever is filmed.

Substandard cameras and projectors and the films that are used in them will permit a movie maker to record and to show pictures that will meet a wide variety of non theatrical needs. We can make profits from our hobby, if we can bring to it the necessary initiative, imagination and skill.

## CHAPTER XXI

## THE MOVIE SHOPPER

MOST readers of this book have bought the basic tools of movie making. For them, shopping chiefly involves the addition of accessories, although some persons will make replacements of their initial equipment. There are services, as well as goods, which are offered to personal and to special purpose filmers, and shopping will frequently be concerned with them.

The movie shopper should, first of all, determine to buy intelligently. New equipment should be acquired, to meet specific needs and not through "hit or miss" purchases, which can be very wasteful.

The tools of movie making are good tools, honestly made, whose performance is consistent with the prices that are charged for them. The purchaser does not face the problem of avoiding worthless equipment, but, rather, that of determining just what he wants a machine to accomplish. When you have decided what you wish to do, you can readily find good tools and services with which to do it.

Members of the Amateur Cinema League can secure practical counsel upon their equipment needs, by requesting it from the League's consultants. This request should indicate the purpose which new equipment is to serve; it should also give information of what the filmer already possesses, which should be specified in detail. Dependable stores also will give excellent advice to those who want more movie tools.

After you have discovered what you need, to do the things

that you want to do, buy it, if the price is within the range of what you care to pay. If it is beyond that range, a request to the League will frequently bring substitute suggestions.

*Eight or sixteen?*

Filmers who use the 8mm. system of movie making sometimes ask whether they should abandon it, in favor of 16mm. filming. The great advantage of 8mm. movies over 16mm. films is found in their smaller cost. This may not be so apparent in the initial purchase of equipment, but it becomes evident in the matter of upkeep—by which is meant, of course, the purchase of film. All kinds of 8mm. film are less expensive, when expense is computed on the basis of minutes of screening time, than is comparable 16mm. footage. The favorable differential runs from one third to one half in monochrome or color emulsions. Other accessories, such as reels and film containers, are less expensive in the 8mm. size.

Movie makers who use 8mm. equipment and film produce excellent results. Since the advent of the 8mm. system in 1932, a wide range of basic equipment and accessories have been provided for it. Thus, the day has long since passed when the 8mm. worker need, or in fact does, feel himself the poor relation of personal movies.

The disadvantages of the 8mm. filming system are not many. The size of the image on the screen is smaller than that which can be secured from 16mm. film, but larger images are essential only for public projections; therefore, 8mm. pictures are entirely satisfactory for showing in the home. Special purpose films are more serviceable, if they are produced in 16mm. width, because many persons and most organizations that will borrow them have 16mm. projectors. If the projection is always to be performed by the maker of the film, or by his agents, he can control the choice of equipment and, hence, he can use 8mm. film before small and medium sized groups.

A full range of desirable emulsions—fine grain panchromatic, superspeed panchromatic and color film—are available to the 8mm. worker. Although the photronic sound-on-film track is not likely to be adapted to 8mm. film, magnetic sound tracks, coated on new or existing films, are a promise for the future.

Closeups that are made with 8mm. equipment compare favorably with those that are recorded on 16mm. film, in black and white and in color, although distant shots that are filmed in 8mm. color seem to be less sharp on the screen than those that are made in the 16mm. width.

*Added features*

Many cameras can be adapted to purposes that are not served by the unmodified instrument. Adaptations include the addition of hand cranks, reverse takeups, single frame releases and other valuable features. If you are interested in any of these, you should be quite certain that you know what they will do, before you add them to your camera. Some manufacturers of cameras will decline to make adaptations, which are carried out, otherwise, by special machinists. The advice of the Amateur Cinema League should be sought by its members, before they order these modifications.

*Replacements*

Do not get a new camera, merely because it is more elaborate than your old one. Be sure that you really need additional features, before you abandon equipment that can serve you fully. When you do exchange a simple instrument for one that is more complex, it may be well to get a camera that will give you many new facilities, because your ability and the range of your filming interest will increase, when you get beyond the level of the average.

A new camera should be chosen because it does things that you want it to do. The choice of instruments is wide, and each will accomplish some particular feat that its maker believes

will be of great value to those who purchase it. You should buy specific features that will suit your needs.

A new projector will be acquired because of definite projection requirements. The freedom of combining different lenses and lamps is a convenience. Reel arms that will accommodate larger amounts of footage and the capacity of projecting sound on film pictures are both factors that will influence you, in buying a new machine.

The types and purposes of movie screens have been discussed adequately, elsewhere in this book.

Some persons habitually possess one or more cameras and, possibly, more than one projector. A "second camera" is a convenience, particularly, if it is small and light in weight. Magazine loading cameras and 8mm. machines are very popular, for this reason.

*Used goods*

Movie makers will buy used equipment. The first step in doing this is to select a reliable store, or a concern or person that advertises in dependable periodicals. It is always well to buy used equipment with the privilege of return, after trial. One should have a clear understanding about the condition of the items. Do you take them "as is," or does the agreement call for them to be in perfect working order? If you buy used equipment, it is prudent to have its manufacturer examine the lenses and other instruments of precision that are involved, although you must expect to pay a fee for this service, since the maker of these devices will gain nothing by the sale of used items. If you buy exposure meters or range finders, that are not new, you should have these checked by competent workmen, before you use them.

If the prices of used equipment seem to be extremely low, after you have considered the age of the offerings, be cautious. Their condition may be poor, or the goods may not have a clear title. You should make it a rule, not to buy equipment from unknown persons at ridiculously low prices,

without getting a verified history of the items and without examining them very closely.

*Buying film*

What film shall we buy? Here is a question about which every movie maker should have reliable information. Two factors are involved; the first is that of the particular type of emulsion which you need, to achieve specific results; the second is concerned with the kind of handling, or processing, that it will receive after you have exposed it. As far as the first of these is concerned, League members will find it advisable to discuss the question with the League's consultants, if they have any doubt as to the best emulsion, to be used for a definite purpose.

Dependable film processing can be expected from those companies that have demonstrated their ability to provide uniform results over a period of years, and that have at their command the necessary machinery to do this work well. Organizations that have a large number of processing stations, located all over the world, will offer you an additional convenience, particularly, if you are far from the place where the film was manufactured.

The prices of good emulsions that may be used with full confidence in their performance, in their freshness (which will be indicated by the date which appears on packages of unexposed film) and in their subsequent processing, which most companies sell, included in the initial price, are fairly uniform. Film that will perform special functions often costs more than ordinary emulsions. When you pay more for film, be sure that you know why you need it, and do not use more expensive footage, unless you really require it. Reliable manufacturers will give impartial information and will make no effort to sell you more costly products than you need. The prices that are charged by the better known companies are based on the specific attributes of the different emulsions; they do not represent competitive bidding for the movie maker's dollar.

Processing is very important. The large companies that sell movie film have proved their ability to perform this important task carefully and well. Some smaller organizations have built up records for dependability, by years of satisfactory relations with the public. Before you buy film, particularly, if its price is lower than that which is charged by the older companies, assure yourself that you are dealing with a business concern that will be able to perform complex processing adequately, and that makes no claims that cannot be accepted at full value.

*Ready made films*

Films that are ready to project can be bought or rented. If you will be giving frequent movie programs, you will find it advisable to assemble a library of films that you will own; records of important historical events are desirable possessions which will serve you well in later years. If you are greatly interested in any subject, you will find that films that deal with it are worth buying. Rented films are a real convenience, when you invite your friends to a movie party, especially if your own footage is fairly limited in quantity and in range of interest. These rented additions to your program can be secured at a reasonable cost and without delay. Companies that exchange films, on a permanent ownership basis, will enable you to refresh your film library conveniently. Rental and exchange are less expensive, of course, than outright purchase.

A wide assortment of pictures is available, without charge, besides the cost of transportation. Some of these are offered by various governmental units, others may be secured from societies that wish to further their purposes by movies, and a very large number are offered by commercial concerns, for the purpose of increasing their sales. This purpose does not usually make a film unsuitable for most programs, because the advertising is generally unobtrusive. Lists of "free films" are available from various sources. Not every one of

these films will be sent to individuals; many of the distributing organizations will require that their pictures be shown to a specifically minimum number of persons, before they will lend them.

*Services*

The services that are offered to personal and to special purpose filmers are comprehensive. Titles can be made for you, and your editing can be performed as you direct, or, if you prefer, without your direction. Scenarios can be prepared, to meet your needs, and sound can be added to your finished movies. These services will be honestly performed, if they are those that are advertised in reputable publications; their cost is not excessive.

Cameras and projectors can often be rented from movie and photographic stores. If you want both the equipment and somebody to operate it, many dealers will provide this service also. A number of competent individuals or companies will make films of special events, such as weddings, graduation ceremonies, awards of honors and similar occasions, so that you need not be without a movie record, if circumstances prevent your making it.

Repairs to movie equipment should generally be made by the companies that manufacture it, although many movie dealers and special repair shops are entirely dependable, if you should find it inconvenient to send your instruments to a factory.

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